The BONGE

105TH ANNUAL ISSUE . A CHILTON PUBLICATION . JANUARY 7, 1960

1960 BUSINESS FORECAST

and MARKET PLANNING GUIDE



Including 3 Special Surveys:

As Leaders of 20 Industries See 1960 - P. 199

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WIDE FLANGE BEAM and STRUCTURAL MILLS

MESTA

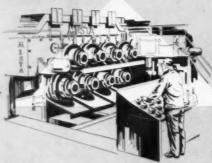


Rolling
Wide Flange
Beams in the 40"
Finishing Mill Stand
on the MESTA
Universal Structural
Mill at Inland Steel
Company

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA





Look who burned his finger ...at a backyard barbecue

If a Bethlehem steelworker is injured, it happens at home more often than in the steel plant. As a matter of record, he's many times safer on the job than he is at home.

For example, in a recent 12-month period the 20,000 men normally employed at our Bethlehem, Pa., plant sustained a total of 152 disabling accidents at home or on the highways. During the same period these employees had only 19 lost-time accidents at work in the plant. In other words,

exactly 8 such accidents *outside* the plant for every one that occurred while at work.

For every one of the past 17 years a Bethlehem plant has won first place in the National Safety Council's annual contest among the nation's 20 largest steel plants.

It is heartening to know that in America the advances in steel technology have been more than matched by the accomplishments in the field of human safety.

BETHLEHEM STEEL



THE IRON AGE Chestnut and 56th Sts. Philadelphia 39, Pa., SH 8-2000 GEORGE T. HOOK, Publisher

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The IRON AGE

January 7, 1960-Vol. 185, No. 1

Digest of 1960 Outlook for

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MARKETING GUIDES TO NEW BUSINESS

TEN-YEAR OUTLOOK

Soaring '60's—Metalworking will make steady progress during the next ten years along with the rest of the economy.

The gross national product may hit \$700 billion by 1970 and is ex-

105th ANNUAL ISSUE: The overall business outlook for 1960 is highly favorable. But the degree of prosperity will vary by industry. This year's annual issue tells the outlook for over a score of metal-working groups. It also provides

three major features to help management in its 1960 planning.



pected to pass the \$500 billion mark this year.

This ten-year business forecast tells how metalworking will fare in our expanding economy. P. 293

STEEL CONSUMPTION SURVEY

New Management Tool—Special study reports use of six major steel products by metalworking in 15 states for 1959 with a forecast for first half of '60. Breakdown by 3-digit SIC groups provides new data of type proved most useful for market planning.

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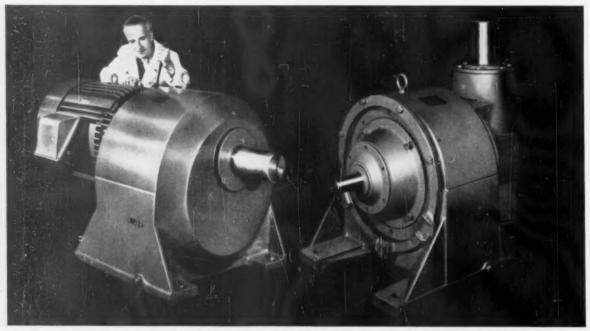
PROGRAMMED MACHINING

Another Advance—Industry has been successful automating both traverse and longitudinal jig boring operations through tape controls. Next week's technical feature describes the latest advance: Controlling the depth of bore.



NOW...high horsepower Gearmotors and In-Line Reducers that weigh less, have increased load carrying capacity

The gearing in these drives is case hardened and precision ground, a development so advanced that conventional standards and ratings are suddenly out-of-date. You get commercial gear drives with gearing of master gear quality, plus a whole new set of engineering advantages. They are available in standard sizes to 200 H.P.



(Left) 75-HP GEARMOTOR.
Application: heavy duty machine tool drive.

(Right) 50-HP IN-LINE REDUCER with right angle attachment.

Application: conveyor drive.

LONGER LIFE

Extreme accuracy of tooth profiles, profile spacing and surface finish eliminates "running in" and resulting gear wear,

HIGHER SPEEDS

Dynamic load factors are reduced. Reducers operate at higher speeds, have increased load carrying capacity.

REDUCED VIBRATION

Reduced tooth to tooth errors, accumulated pitch errors and total composite errors give smoother contact.

SPACE AND WEIGHT SAVINGS

Harder materials, plus major reductions in load factors, save weight and space without sacrificing performance.

REDUCED SOUND LEVELS

For applications where low sound levels are important, gear noise is no longer a controlling factor.

100% INTERCHANGEABILITY

Duplicate units or spares can be installed with original manufacturing tolerances duplicated exactly.

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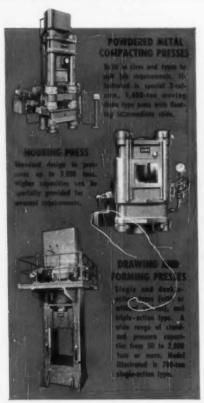
PRODUCTION COSTS

We can lower it for You!

Time after time, production men come to Elmes for help in combating rising costs on jobs involving presswork. And time after time, Elmes engineers provide job-fitted installations that result in costlowering, profit-making performance.

Solving "pressing problems" is not new for Elmes, where an outstanding leadership in hydraulic service has been maintained for over half a century. Sometimes the answer is found in a standard design Elmes® Press, or a standard design with modifications. Or, in unusual situations, special custom-built units may be needed. In any case, an Elmes recommendation will meet requirements exactly-an Elmes installation will provide high productivity, trouble-free operation, minimum maintenance.

Get a new "line" on your production costs. Talk it over with your nearby Elmes Distributor, or write to us direct.



(Right) Elmes 250-Ton Open-Side Press straightening steel castings on a high production schedule. Proved 40% faster than presses previously used, it



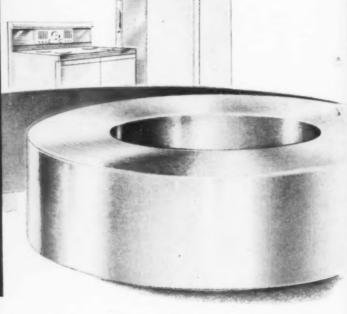
Elmes 500-Ton Inclined Forcing Press is shown pressing a 4-ton gear on a 33,000 lb. hoisting drum for a huge ladle crane. Pressure of 120 tons was required to force the gear into place. User reports 50% savings in costs of these large gear installations with the Elmes equipment—"job-fitted" for maximum productivity with low costs.



American Steel Foundries

1166 Tennessee Avenue, Cincinnati 29, Ohio METAL-WORKING PRESSES . PLASTICS MOLDING PRESSES . PUMPS . ACCUMULATORS





haron stainless



Sharon Stainless Steels excel in the things you need to make your appliance more attractive . . . more durable. Tolerance, drawing ability, dense smooth finish, you name it . . . Sharon stainless includes the best combination . . . manufactured to your exact need.

Consider too, Sharonart*, Sharon's exciting new rolled-in surface patterned steel-opening a new breadth of design flexibility for the appliance designer. Sharonart* made of stainless steel will reflect an infinite variety of color and texture combinations. Many beautiful patterns available.

For the stainless you need to make your product even better-get in touch with your Sharon representative -or write us direct. Sharon Steel Corporation, Sharon, Pa.

SHARON Quality STEEL

The Job At The Top: Powder Puffs Need Not Apply

This is the season for exhortations. It is the time for slogans and new horizons. Stop here if that is what you expect to read.

Easy pickin's are over. He who doesn't know it better find out. These fabulous sixties will be tricky. Propaganda or canned motivation aids will not substitute for tough sledding.

There isn't going to be an easy time for the top fellow in business. And he isn't going to make it easier for the man below on the organization chart—if there is one.

On the matter of prices: They have to be kept down or at least kept from skyrocketing. The union bosses are blind to the trend against high wages and high prices. The public is fed up. They don't want excuses—or defenses.

When higher prices appear, a little more of our economy is lost to a good foreign sales pitch and well planned foreign production. That's bad. Add to this their ageless experience in world trading. We don't have it now. We had better regain some of it.

Some day union chiefs will wake up. They will be forced to do their part. Management can't force them to do it any more than a father can live his 30-year-old son's life.

Somehow, management must produce more at

a lower cost; sell more at stable or lower prices. It must do all it can to keep labor costs in check. But in the end, management will be judged more harshly than will labor.

Among all management worries there is one which gets no attention: There are too many "yes" men. It isn't always their fault. It is the pattern of the times—a formula for "getting ahead." It won't work as well anymore.

Decisions must be made at the top with details furnished by others. That's good. It's proper. But unless new thinking, new changes and new outlooks are clear to the leader, he may make unsound judgments. So he needs to hear the truth as it is—not as he may like it to be.

There is too much at stake in the next 15 years to have many misjudgments. Top level briefings are not enough anymore. The boss must get his feet wet again. He must get the lowdown from people who are not afraid of being fired.

The pinnacle is no bed of roses. It requires more than enlightened mediocrity. It needs more than textbook or graduate school methodology. It needs broad, human, intelligent knowledge—and experience—more than it ever has before.

Tom Campkeee

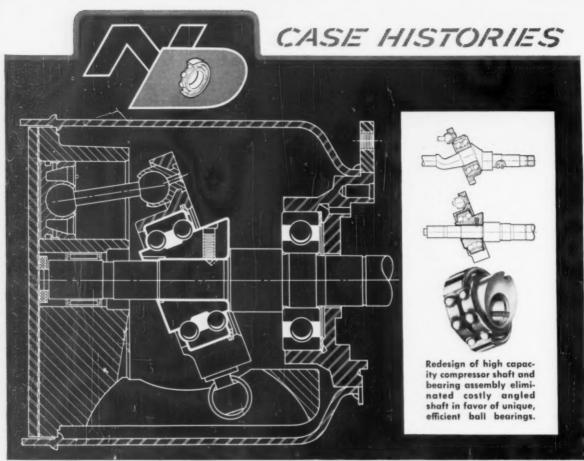


Illustration: Courtesy, Frigidaire Division, General Motors Corporation

Unique Wobble Plate Ball Bearing Simplifies Axial Compressor Design!

CUSTOMER PROBLEM:

In developing the ideal compressor for automobile air conditioning unit, customer engineers faced the problem of further design simplification and refinement of pilot model.

SOLUTION:

N/D Sales Engineer, in co-operation with customer, pointed out a possible design simplification in the crankshaft bearing assembly. By providing a specially designed N/D precision ball bearing with shaft bore at an angle, a straight shaft could replace the original pilot model crankshaft. The wobble plate angle would then be supplied by the bearing rather than the shaft. First

tests proved the new and simpler shaft/bearing assembly met customer's rigid performance standards in high capacity compressor. Final testing of some 300 pilot models, both in the laboratory and on road test cars, finalized the design. Now . . . all GM air conditioner equipped cars are cooled with the aid of N/D ball bearings.

If you're working on new designs . . . or redesigning, why not call your N/D Sales Engineer. He knows the performance possibilities of virtually every ball bearing made . . . and, he knows what can be done with special bearing designs! For more information write New Departure Division, General Motors Corporation, Bristol, Connecticut.



NEW DEPARTURE

BALL BEARINGS

proved reliability you can build around

Automatic Warehousing

First installation now being debugged in an automotive parts supplier plant will bring a major advance in automatic warehousing. Using static controls, the system will sort, count, collect and release for shipping the proper mix of instrument clusters. It utilizes plant overhead areas, not previously used, for big savings in costly production space.

Adapts Electric Furnaces

Another midwestern electric furnace company has completed initial work in adapting its furnaces to oxygen-gas additions during meltdown. The process looks very favorable for high production levels in specialty steels.

Expect Tinplate Record

Look for tinplate shipments to set a new record in 1960. Steel mills expect to hit about 7 million tons in the year although first half output will probably be under the 4 million tons of 1958. Normally 60 pct of all tinplate for a year goes out in the first half; in 1960, the second half will be almost as strong as the first.

Shapes Stone with Torch

Of interest to the metalworking industry may be Linde Co.'s new rocket-jet torch. The torch carves and shapes stone up to five times faster than with mechanical tools. Oxygen and kerosene combine to produce the hot (5500°F) flame. High nozzle velocity of 7000 fps join with the intense heat to cause the stone to spall.

Leads to Embrittlement

Presence of phosphorous, antimony, arsenic, tin, manganese, and silicon in steel promotes susceptibility to embrittlement at 450°C. The most potent of these elements is antimony. Other conclusions of research recently performed in Eng-

land: steel containing carbon, nickel, chromium, and molybdenum is not susceptible to embrittlement within 1000 hours at 450°C; molybdenum retards but does not prevent development of embrittlement.

New Anodizing Process

Aluminum can be protected against alkali media as well as seashore and industrial atmospheric conditions by a new anodizing process. According to the developers, Colonial Alloys Co., the new process affords protection to aluminum parts used in the automotive, aircraft, household appliance, and building construction fields.

Improved Gold Alloy

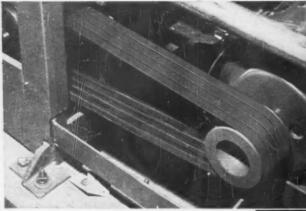
Key to the success of a new gold-antimony alloy is the homogeneous dispersion of the antimony-rich phase. Developed by Englehard Industries, Inc., the alloy is used to "dope" semiconductor materials with a controlled amount of antimony evaporated from the alloy.

Enters Metalworking Field

This year will see the marketing of a new electron beam unit by Hamilton Standard, div. of United Aircraft Corp. It marks the division's first major step out of the aviation field in 40 years. The new process and its equipment can perform operations on the hardest materials impossible with any other process, according to the company.

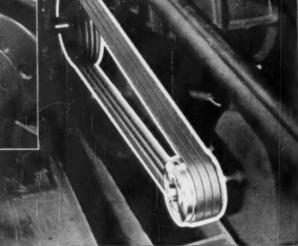
Protects Columbium

The problem of high temperature oxidation of columbium is relieved by a new coating, developed by the Naval Research Lab. It prevents oxidation of columbium up to 2200°F by automatically "healing itself." The coating is made of zinc which is alloyed with the columbium. At high temperatures, the zinc is slowly released from the alloy and forms a protective coat on the metal.



Before: Four standard belts were required to drive the clothes pressing unit manufactured by a Utah company.

After: Three Gates Super HC V-Belts now handle the redesigned pressing unit drive - save more than 16 pounds in drive weight - 24% in drive cost.



Utah manufacturer cuts drive cost 24% with new high capacity V-Belt

Drive weight reduced 16 pounds per unit!

This manufacturer is just one of many who have already turned to Gates Super HC V-Belts to achieve far more compact, lighter weight, lower cost V-belt drives for all types of machines. With new Super HC

V-Belts, sheave dimensions can be reduced 30% to 50%, overall space up to 50%, and drive weight by 20% and more.

A product of Specialized Research in the world's largest V-belt laboratories at Gates, the Super HC V-Belt Drive is already standard equipment on production models in virtually every industry.

Engineering Service Nation-Wide

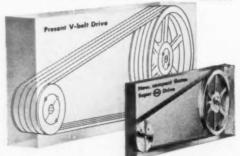
Whatever your plant's power transmission design problem, wherever you are, your nearby Gates Distributor or Field Representative is ready

to assist you to cut space, weight, and costs with Super HC. Ask him for a copy of "The Modern Way to Design Multiple V-Belt Drives."

The Gates Rubber Company, Denver, Colorado Gates Rubber of Canada Ltd., Brantford, Ontario



World's Largest Maker of V-Belts



Gates Super HC V-Belt Drives same hp capacity in smaller "package"

Relative Costs

Sir—We are interested to know if you, or anyone of your acquaintance, has ever studied the relative costs of a maintenance crew of sufficient size to do all required maintenance in a five day week versus a smaller crew working six days without production on the sixth day.

We do not have records to conduct such a study ourselves and thought you may have conducted a similar study.

Possibly the readers of your publication might have some comment.

—C. A. Beckwith, Supt. of Maintenance, Motor Wheel Corp., Lansing, Mich.

• We have not taken any survey of this type and know of none that have been conducted. However, it's an interesting thought.—Ed.

Pillow Talk

Sir—Being a female and the wife of a steelworker who was laid off for seven months last year (due to low business conditions, but not a strike), I would like to point out to you where the last paragraph in your Dec. 10 editorial might possibly be wrong.

I might also add that the Union is wrong, too, in thinking that any housewife or working wife is going to take the time to read any printed matter that comes from main headquarters with the hope of catching her eye. It'll probably be pitched into the wastebasket just as quickly as circulars inviting magazine subscriptions, grocery lists and last month's bills. My experience with the official Steel Labor newspaper that my husband gets, due to his membership in the CIO, is that it receives a non-stop trip from the mail box to the wastebasket!

The average steelworker does not like (1) unpaid, overdue bills, (2)

time on his hands day after day, (3) absence of the usual little "luxuries," (4) loans from friends, relatives, banks, and (5) an unhappy wife. His wife, due to the female's desire for security (so the psychiatrists say), feels twice as strongly about an upset daily existence as does her spouse. So, if she is going to have any influence on the way her husband votes in that booth all alone, it's going to be because he wants to take care of item (5) just as quickly as possible!

Ask any man with an unhappy wife!—Name Withheld.

Maintenance

Sir—I have just read your feature article, "How To Get More For Your Metalworking Dollar—Maintenance.

Would you please mail me three additional copies. I feel that the information in this article will be very beneficial to our Maintenance Department.—T. E. Jarman, Chief Plant Engineer, Hayes Aircraft Corp., Birmingham, Ala.

Sir—We would like to have two reprints of the article.

We feel that this article is very excellently written and covers the subject. We hope that it will be of some help to us in setting up our own preventive maintenance system.

—John Gissey, Chief Engineer, H. P. Snyder Mfg. Co., Inc., Little Falls, N. Y.

Sir—Your article on the "Maintenance Dollar" was of such real value to me that I'd like to distribute several copies to key people in this organization.

May I have three reprints?—P. A. Repino, Plant Engineer, Lebanon Steel Foundry, Lebanon, Pa.

Reprints have been mailed.—
 Ed.



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FATIGUE CRACKS

Tell-Tale Test

One of our editors got a severe jolt last week, and right where it hurts most—professional pride.

He was out on a reporting assignment for a future story, something about how businessmen can save themselves a lot of time if they learn to read fast and accurately.

The Lady Asked—His reporting took him to the Philadelphia office of the Reading Laboratory Inc., a speed reading and comprehension school. Everything was going fine, he thought, until he was asked to take the speed and comprehension test "just to get the feeling of the course."

Sure, he replied, mentally chalking up an all-time record for the test. After all, fast, accurate reading on the copy desk and in his editorial work was his profession. And he thought modestly, he was pretty good at it.

Kind Note—But the test was an eye-opener. Not only wasn't he a very fast reader, but his comprehension wasn't up to what it should be. It showed much room for improvement. Red-faced, he muttered something like "very interesting," and retreated.

Maybe he'll take the course.

Boss's note: He will, or else. . . .

In All 50

There's nothing that pleases us more than thinking about how The IRON AGE is quoted and referred to authoritatively in the daily press across the country.

But now, we have the distinction of being quoted not just in the oldfashioned 48 states, but in all 50.

Both Hawaii and Alaska followed their old counterparts in coverage of the present steel situation. In Alaska the Ketchikan News and the Anchorage Daily News picked up IRON AGE information on what was happening in the negotiations.

And out in the blue Pacific, the Honolulu Star Bulletin also had an article on the strike based on IRON AGE coverage.

In Reverse

Engineers at Niagara Falls have an uphill project on their hands. They're going to pump the water that cascades over the famous honeymoon spot back up to near where it started down.

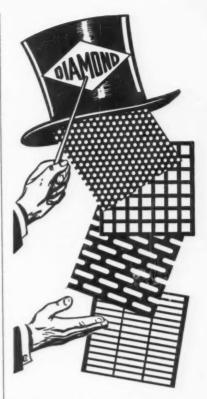
This water will increase the supply available to electric generating stations in the area. A present treaty with Canada limits the amount of water that can be diverted from Niagara Falls and used to turn electric generators.

Two Opinions — The engineers point out that water flowing over the Falls at night goes to waste. By pumping it back up, this water can be used to meet daytime industrial electrical needs.

We wonder if the thousands of couples, standing hand - in - hand watching the swirling water, ever thought it was being wasted.



"I looked over your model, Cranston, and now I suppose you're wondering if I liked it or not."



Top-Hat Quality Perforated Metal

The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

Catalog 39 also illustrates and describes our high-quality lines of Ornamental Cane, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

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Vibration test of ingot bundle. Signode vibrator handles up to 3 tons at accelerations over one G.



After test, equivalent to the effect of expected actual handling and transit, the bundle still looked like this.

Shake well before shipping!

A neat 2,300 pound bundle of aluminum ingots becomes 44 ingots trying desperately to go their separate ways...driven by the joggles and jolts of the vibration tester in the Signode Packaging Laboratory. The ingots hold together, though. They're bound to...by 51 cents worth of steel strapping pulled to about 3,000 pounds tension. We don't know of another material that could do this job at all...let alone at such low cost. And consider the savings of having Signode find out in advance and at no cost to you how to make your product behave in transit. This is one more way Signode helps make things cost less to handle, store, ship, and receive. For further information, talk to the Signode man near you, or write:



First in steel strapping

SIGNODE STEEL STRAPPING CO.

2623 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

14

COMING EXHIBITS

Plant Maintenance & Engineering Show — Jan. 25-28, Convention Hall, Philadelphia. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Tool Show—April 21-28, Detroit Artillery Armory, Detroit. (American Society of Tool Engineers, 10700 Puritan, Detroit 38.)

Welding Show—April 25-29, Great Western Exhibit Center, Los Angeles. (American Welding Society, Inc., 33 West 39th St., New York 18.)

Southwestern Metal Show — May 9-13, State Fair Park, Automobile Bldg., Dallas, Texas. (American Society for Metals, Metals Park, Novelty, O.)

Design Engineering Show — May 23-26, Coliseum, New York. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Production Engineering Show— Sept. 6-16, Navy Pier, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Machine Tool Exposition—Sept. 6-16, International Amphitheatre, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Iron & Steel Show—Sept. 27-30, Cleveland Public Auditorium, Cleveland, O. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22.)

MEETINGS

JANUARY

Institute of Scrap Iron & Steel, Inc.
—Annual convention, Jan. 10-13,
Fontainebleau Hotel, Miami Beach,
Fla. Institute headquarters, 1729
H St., N. W., Washington, D. C.

Society of Plastics Engineers, Inc.

—Annual technical conference,

(Continued on P. 18)

LEWELLEN

COMPONENTS INCORPORATE VARIABLE SPEEDS

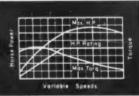


Ratings to 25 h.p.

Speed ranges to 10:1

Selection of stock bores and center distances

Selection of controlling devices and accessories



Typical pattern of horsepower/torque characteristics

The shaft of a standard motor and the equipment input shaft mount the drive.

With an 1800 r.p.m. motor, any input speed from 500 to 4000 r.p.m. is available.

Handwheel adjusts speeds while running, without altering shaft center distance.

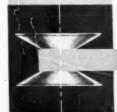
Shaft and bearing loads are normal. No thrust loads are imposed. No beefing or supporting structure is required.

Installation is quickly and easily made. Normal service requires only routine lubrication.
Sustained performance with overload capa-

city is obtained.

Lewellen Combination Pulleys offer a direct, compact, economical method for applying vari-

able speeds.



Catalog 70 del s and dimensions the performance, convenience and utility of Lewellen Pulleys.

LEWELLEN

Manufacturing Company, Columbus, Indiana

Distributors in All Industrial Areas. In Canada— Peerless Engineering Sales, Ltd., Toronto-Montreal LANDIS HAS ALL THREE



THREAD ROLLING MACHINES

... produce strong, accurate threads of excellent finish by the chipless, cold-forming process... produce left- and right-hand threads of all types (except square), including UNC, UNF, Acme, worm, and many special forms.



THREAD ROLLING ATTACHMENTS

... produce either straight or tapered threads... exclusive features include: tipping to avoid indexing interference... simple design allows disengaging attachment without disturbing set-up... and a gage determines precise position where vertical centerlines of both rolls and workpiece coincide.



THREAD ROLLING HEADS

threads of excellent finish at high speeds...feature replaceable helix angle bushings which allows rolling threads with exact helix angles without purchasing major head components.

Whatever your Thread Rolling requirement, there is a LANDIS machine or tool to do the job. Our detailed knowledge of the most efficient application of the different methods of thread rolling—and our more than 50 years experience in the threading field—has resulted in our producing a complete line of thread rolling equipment. Make LANDIS your one-stop source for all your thread rolling needs. When inquiring about Thread Rolling, describe your operation and send specifications.

LANDIS Machine COMPANY

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT

WAYNESBORO PENNSYLVANIA



Threading Machines



Die Heads — Rotary & Stationary



Taps—Collapsible & Solid Adjustable



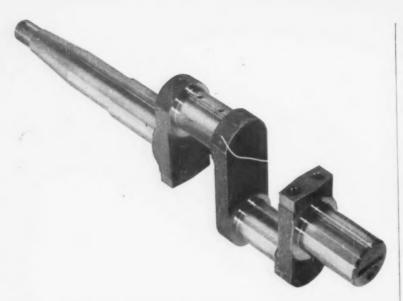
Centerless Thread Grinding Machines



Thread Rolling Tools



Thread Rolling Machines



SAVED MONEY

This seventy pound ductile iron crankshaft was made for air compressors manufactured by The Brunner Division of Dunham-Bush, Inc. The increased loads and impact resistance called for by new compressor design specifications required rigidity and strength beyond the limits of the cast iron alloy shafts formerly used. Ductile iron was chosen because the rigidity, yield strength and wear characteristics comfortably exceed operating requirements.

A major cost advantage was realized in this case. Hamilton Foundry used existing pattern equipment made for the gray iron crankshafts in the switch to ductile iron. This saved the cost of new foundry patterns and the greater cost of dies needed for steel forgings. Dunham-Bush achieved a major improvement in product performance for the modest additional cost of the metal in the castings.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

GRAY IRON • ALLOYED IRON • MEEHANITE $^{\circledR}$ • DUCTILE (NODULAR) IRON • NI-RESIST • DUCTILE NI-RESIST • NI-HARD



HAMILTON FOUNDRY

1551 LINCOLN AVENUE . HAMILTON, OHIO . TWINDROOK 5-7491

MEETINGS

(Continued from P. 15)

Jan. 12-15, Conrad Hilton Hotel, Chicago. Society headquarters, 65 Prospect St., Stamford, Conn.

Society of Automotive Engineers, Inc.—Annual meeting, Jan. 12-16, The Sheraton-Cadillac and Statler Hotels, Detroit. Society headquarters, 485 Lexington Ave., New York.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 18-19. Warwick Hotel, Philadelphia. Association headquarters, 1145 19th St., N. W., Washington, D. C.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 19-20, St. Regis Hotel, New York. Institute headquarters, 600 Fifth Ave., New York.

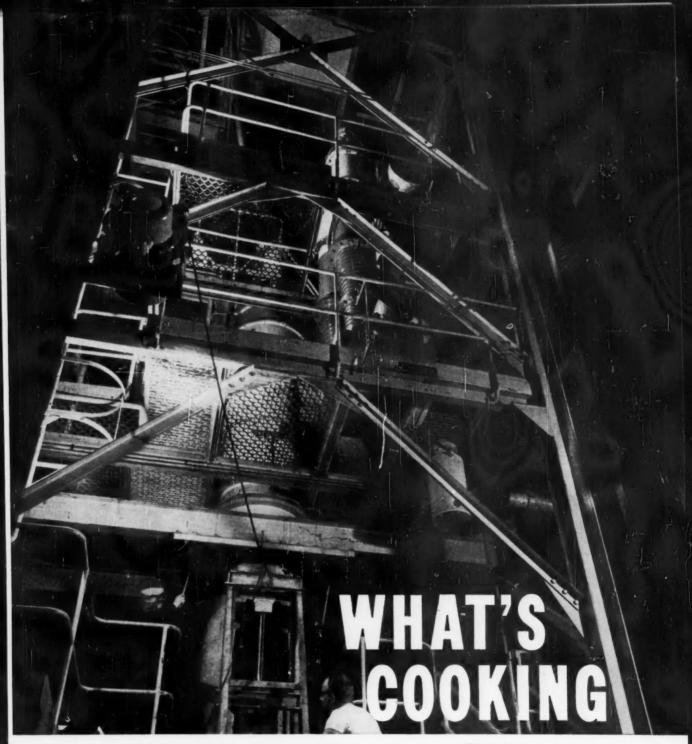
Steel Plate Fabricators Assn.—Annual meeting, Jan. 21-22, Roosevelt Hotel, New Orleans, La. Association headquarters, 105 W. Madison St., Chicago.

Truck Trailers Mfrs. Assn.—Annual convention, Jan. 24-27, Hotel del Coronado, Coronado, Calif. Association headquarters, 710 Albee Bldg., Washington, D. C.

Cutting Tool Mfrs. Assn.—Annual meeting, Jan. 28, Harmonic Club, Detroit. Association headquarters, 416 Penobscott Bldg., Detroit.

Assn. of Steel Distributors, Inc.— Convention, Jan. 30 - Feb. 6, El Mirado Hotel, Palm Springs, Calif. Association headquarters, 29 Broadway, New York 6, N. Y.

American Institute of Electrical Engineers—Winter general meeting, Jan. 31-Feb. 5, Hotel Statler, New York. Institute headquarters, 33 W. 39th St., New York 18, N. Y.



... inside Vanadium-Alloys' new CVC furnace?

Amazing new steels. Vacuum-purified steels that approach theoretical limits of strength and temperature resistance. *And* a promise of newer, even stronger steels.

With this huge CVC consumable electrode furnace, Vanadium-Alloys can produce ultra-pure ingots up to 2 feet in diameter. Today's highest vacuum—.0000068 atmospheres—keeps contaminants out. And it's all done with pushbutton electronic controls!

There's a complete line of CVC arc furnaces to meet your vacuum melting needs, from laboratory to volume production.

WRITE for Bulletin 4-25.

Consolidated Vacuum Corporation

ROCHESTER 3, NEW YORK

A SUBSIDIARY OF CONSOLIDATED ELECTRODYNAMICS CORPORATION
(FORMERLY ROCHESTER DIVISION)



the latest word in low cost machining

televersal

This new GRAY TELEVERSAL head tremendously increases machining range. Conveniently applied, quickly positioned, its great rigidity permits highest horsepower milling cuts.

The large diameter quill may be swiveled to permit any angular cut. A triple-straddle clamp inflexibly locks the quill to the cast pyramid body.

Designed to keep the job low and yet permit great machining range. Ideal when used with column cross travel of the new GRAY horizontal, boring, drilling and milling machine.

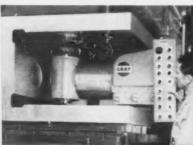
Not just an attachment, but a high power massively built, heavy milling unit that offers a new concept in versatility.

The G. A. GRAY Co., Cincinnati, Ohio



six different surfaces and more...and only ONE work-setting









Mmm Maightmare alley Mmm

Monny Monny Monny Monny Monny

Not knowing what's going to happen next—this is the most upsetting aspect of nightmares . . . and buying and using many stainless steels.

When you order stainless steel from your nearby Carpenter SERVICE-CENTER, you know in advance what you're getting:

Predictable performance! Every bar, every order, assures you the advantages inherent in maximum uniformity. You hold production and service problems to a minimum. *Carpenter* has taken the guesswork out of stainless.

Large local stocks! Billet, bar or wire . . . your Carpenter SERVICE-CENTER has it. We stock an unusually wide range of grades and sizes to accommodate your most diversified needs.

Technical help extraordinary! No matter how difficult your problem, there's an excellent chance that *Carpenter's* continuing Research and Development Program has already produced information to save you time and money. Other progressive companies take advantage of our metallurgical services. Why don't you?

tool and die steels

farpenter steel

electronic, magnetic and electrical alloys high temperature alloys special-purpose steels



fine wire specialties

The Carpenter Steel Company, Main Office and Mills, Reading, Pa. Alloy Tube Division, Union, N. J. Webb Wire Division, New Brunswick, N. J. Carpenter Steel of New England, Inc., Bridgeport, Conn.



complete normalizing line:

ALL SURFACE!

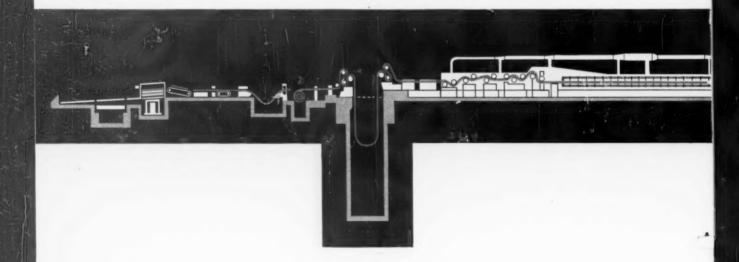


Exit end of the line, showing looping pit, "recoiler," automatic shear and sheared sheet piler.



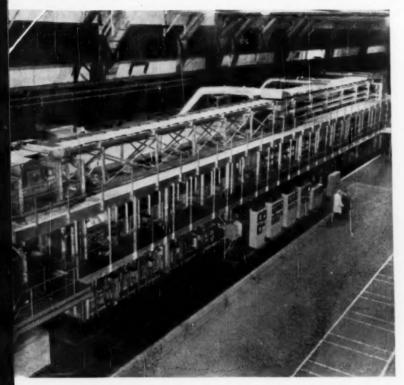
Pickling section includes acid bath, water rinse tank, brush scrubbers, alkali tank and dryer, all installed by Surface. This view shows the exit end of the section.



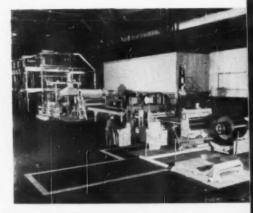


from payoff...to payoff

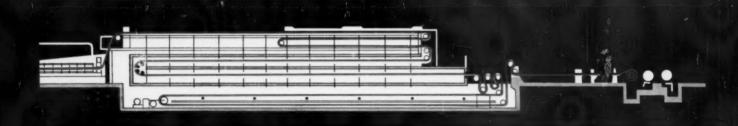
Worldwide engineering and manufacturing facilities through associates in Australia · Belgium · France · Germany · Great Britain · Italy · Japan



Rockwells in the low 40's are achieved consistently in this threelevel normalizing furnace. Heating zone is on the lower furnace level; convection cooling in the middle; air blast cooling at the top. A horizontal "looper" is located underneath the furnace.



Payoff reel marks the entry of low carbon stock after cold rolling. Speeds of 150 fpm on 60" wide strip are attained.



This complete new Surface normalizing line for vitreous enamel stock started paying off on its first day of operation. For example, its capacity of 30,000 lbs. an hour puts this mill forcefully into the market for deep draw quality strip. More than adding new selling power, this big line increased productivity per operator by an almost unbelievable amount.

From payoff reel to real payoff, the entire installation is a graphic demonstration of Surface's qualifications as prime contractor.

Applying its global experience in metallurgy, combustion, chemistry, and mechanization, Surface engineered and installed the complete line.

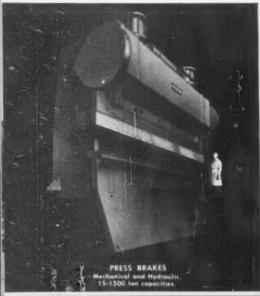
Take the opportunity now to evaluate the prime contracting skills available at Surface, and mobilize them for your profit, wherever heat is used in industry.



SURFACE COMBUSTION 2402 Dorr Street, Toledo 1, Ohio

In plate or sheet metalworking...

NIAGARA MACHINES CAN









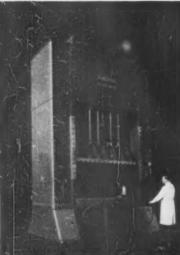
STRAIGHT SIDE SINGLE & DOUBLE CRANK PRESSES 50-500 ton capacities.



 $3-6\,V_2$ inch shaft diameters. 48 - 222 ton capacities. Also, inclinable series.



 $_{1}$ - 7 $\frac{1}{12}$ inch shaft diameters $5\frac{1}{12}$ -250 ton capacities.



STRAIGHT SIDE ECCENTRIC GEARED PRESSES One, two, and four-point suspension. 100-1250 ten capacities. Standard and equipped for automation.



FRONT-TO-BACK CRANKSHAFT OPEN BACK INCLINABLE PRESSES Standard and automation models. 45-200 ten capacities.

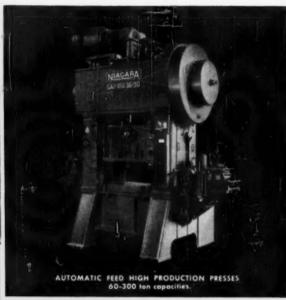


FRONT-TO-BACK CRANKSHAFT ADJUSTABLE BED PRESSES
Standard and mudified models.
22-150 ton capacities.

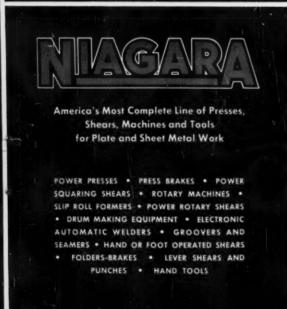


FRONT-TO-BACK CRANKSHAFT DEEP THROAT PRESSES 72-150 ton capacities

DO THE MOST FOR YOU







* MOST EXTENSIVE LINE:

From giant, power-operated machinery to small hand tools

*** MOST ADVANCED DESIGNS:**

Years ahead in performance through forwardthinking engineering

In the world's largest automotive and appliance plants or the smallest of sheet metal shops, Niagara machines and tools are usually at work "in force."

Batteries of giant presses are teamed up with speedy ring and circle shears. Massive, rugged press brakes stand side-by-side with powerful bending rolls and squaring shears. Versatile lever punches, rotary machines, groovers and seamers . . . all operate together to produce a better product at lower cost. The Niagara lines are "companion lines" of metalworking machines and tools that work together. A Niagara-equipped shop or plant is years ahead in quality and volume of production.

Whatever you require—power presses or hand tools—Niagara is the line that can do the most for you. It is the most complete in the industry... the most advanced in engineering. You can consult a Niagara representative with complete confidence of unbiased recommendations. Niagara has the right machines and tools for your requirements.

BRING YOUR FILES UP-TO-DATE WITH INFORMATIVE NIAGARA BULLETINS

A diversified and extensive list of machines and tools make up the famous Niagara line. Some of the principal types are illustrated. Be sure that you have the latest data on the ones that apply to your work. At your request, specific Bulletins will be mailed promptly.



NIAGARA MACHINE & TOOL WORKS . BUFFALO 11, N.Y.

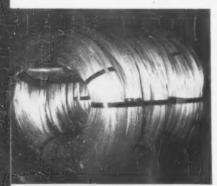
DISTRICT OFFICES

Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia

Distributors in principal U. S. cities and major foreign countries



Other new AS&W Wire Packages mean important savings in



UNITIZED COILS: Several regular mill coils bound in one unit to speed up handling and save storage space. Unitized coils carry no price extra!



PAY-OFF DRUMS:
Large, fibre, disposable carton containing long continuous wire coil. Pay-Off Drum is easy to handle and stack, protects wire finish from dirt and corrosive atmospheres.



DISPOSABLE SPOOLS: Contain up to 65 pounds of fine wire; are shipped on expendable pallets. These non-returnable spools are convenient to handle and stack.

WEIGHT WIRE COILS

save you down time...

handling time...storage space

...at no increase in cost!

If your mill machines are set up to run with these continuous-wire, heavy-duty coils, they will pay off for you in three ways:

They will speed up your production by eliminating unnecessary down time, unnecessary idling of operators and mechines.

They will save handling time. One large coil

can be handled in a fraction of the time needed to move the same weight in smaller coils.

They save storage space. This big coil takes up far less space than the same weight in smaller coils.

And you get all these advantages as standard mill practice. USS and American are registered trademarks



American Manufacturers Wire

time and storage!



PLATFORM COIL CARRIER: This non-returnable unit is made of U-shaped wire frame attached to deck platform, holds up to 3,000 pounds of wire in continuous lengths.

All of these new American Steel & Wire Packages are planned to serve you better, to help you use warehouse space to better advantage, to save time and money.

For more information, get in touch with the nearest district office of American Steel & Wire. General Offices: American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

American Steel & Wire Division of United States Steel



Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors - Tennessee Coal & Iran Division, Fairfield, Ala., Southern Bistributors
United States Steel Export Company, Distributors Abroad

for Every Gear Production

Right from the blank to the finished external or internal spur or helical gear, Fellows has the complete line of gear production and inspection equipment to meet all your requirements!

No other builder in the world offers as long and varied a line: Fellows Gear Shapers; Pfauter Gear Hobbers; Fellows-Reishauer Gear Grinding Machines; Fellows Gear Inspection Instruments; Fellows special machines and attachments; Fellows Gear Shaper Cutters. All this, plus the benefit of our sixty years of specialized experience in solving gear production problems.

Ask your Fellows representative for information on the complete line of Fellows gear production and inspection equipment. If you have a problem requiring special equipment, ask him to help you solve it, or write direct.

Fellows Has the Equipment to Shape, Hob, Grind and Inspect



Fellows Gear Shapers cut internal and external spurs and helicals; capacities to 120" P.D.



Pfauter Gear Hobbing Machines for spur and helical gears; capacities to 120" P.D.



No. 12 Fellows-Reishauer Gear Grinding Machines grind spurs and helicals to 12" O.D.



No. 20M Fellows Red Liners make and record the "composite check" of spur and helical gears to 18" P.D.

THE FELLOWS GEAR SHAPER COMPANY 78 River Street, Springfield, Vermont

1048 North Woodward Ave., Royal Oak, Mich. 150 West Pleasant Ave., Maywood, N. J. 5835 West North Avenue, Chicago 39 6214 West Manchester Ave., Los Angeles 45

THE PRECISION Cours Gear Production Equipment







from derricks to doll buggies... Sheffield has the right bolts

Sheffield bolts are vital parts of thousands of manufactured products. They range from automobiles to zipper-making machines, From oil field rigs to toys for tots. The list is next to endless.

In all their many applications, one thing is uniformly true of every Sheffield bolt: it's the best that modern metallurgy, engineering minds and advanced machinery can produce. It's Sheffield-made and quality-controlled from furnace to finished bolt.

From one of the world's largest bolt plants, Sheffield can meet your steel bolt needs any kind, any quantity—with top quality and quick delivery. Whether it's a standard or special bolt—or one custom-made to your specifications—you'll get the right bolt fast from Sheffield. Just get in touch with your Sheffield Man.



BOLT PRODUCTS

SHEFFIELD DIVISION



ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

DU PONT ANNOUNCES

"TRICLENE"

TRICHLORETHYLENE

FINISHING

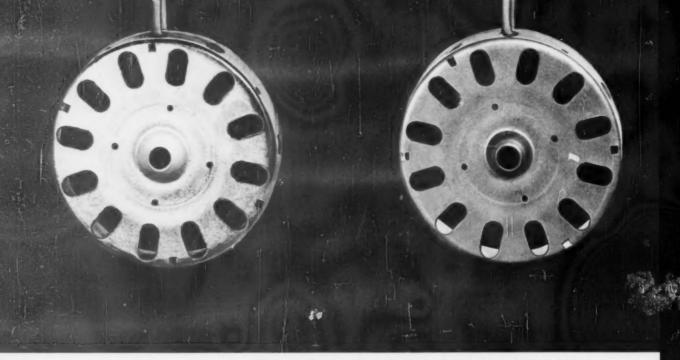


A revolutionary new way to finish metals... based on Du Pont "Triclene" trichlorethylene



Now it is possible to ...

CLEAN—PHOSPHATIZE



The production part (shown above) was cleaned, phosphatized and painted in a "Triclene" Finishing unit built by G. S. Blakeslee & Co., Chicago, Ill.

Du Pont "Triclene" Finishing provides a new, safer way to finish metals—at substantially lower cost!

Low Investment—"Triclene" Finishing cuts equipment cost up to 50% below conventional finishing methods. Because it is an anhydrous system, parts emerge from cleaning and phosphatizing steps completely dry; the need for costly drying ovens is eliminated. The "Triclene" Painting step also eliminates drying ovens and drip pans normally required following conventional painting. Fewer steps mean that in-process parts inventory and conveyor length can be reduced up to 55%.

Low Operating Costs—"Triclene" Finishing can cut operating costs up to 30%. Reason: It permits close to 100% recovery of paint overspray and excess solvent for reuse. Because "Triclene" Finishing is an anhydrous system, heat requirements are drastically reduced.

Reduced Plant Space—"Triclene" Finishing can be done in less than ½ the space because fewer steps are required. For example: a conventional wet cleaning, phosphatizing and dip-painting system requiring 1960 square feet of floor space could be replaced with a "Triclene" Finishing System requiring only 695 sq. ft.

Nonflammable—Trichlorethylene is rated by Underwriters' Laboratories as nonflammable at ordinary room temperatures. Thus fire and explosion hazards are minimized. This means greater plant safety, lower insurance rates and reduced investment in fire protection equipment.

It is flexible

The complete Du Pont "Triclene" Finishing System consists of three basic trichlorethylene-based processes: Vapor Degreasing, Phosphatizing and Painting (see booklet). They can be used in various combinations or incorporated singly into your present finishing system. Various dip or spray cycles can be selected for each of the processes. Both large and small finishing operations can utilize "Triclene" Finishing Processes.

For more detailed information please read the enclosed booklet showing examples of three possible "Triclene" Finishing Systems. PAINT continuously...



in a single medium of nonflammable Triclene® trichlorethylene

more information

Here are the facts on

3 basic Triclene Finishing Systems

- Integrated vapor degreasing and nonflammable painting
- Vapor degreasing and dry phosphatizing
- Vapor degreasing, dry phosphatizing and nonflammable painting

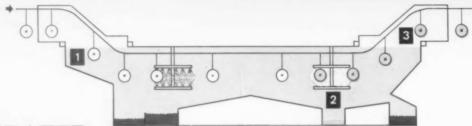
Now it is possible to...

CLEAN—PHOSPHATIZE





Du Pont "Triclene" Finishing System # 1



INTEGRATED

vapor degreasing and nonflammable painting

The first "Triclene" Finishing System—announced by Du Pont last year—made it possible to integrate cleaning and painting in one compact unit.

DESTRUCTION OF WORKS

- 1. A soiled metal part enters the degreasing section of the unit (above) where it is quickly and thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing.
- 2. The part moves into the painting section where a new type of industrial paint, thinned solely with nonflammable "Triclene" Paint Grade trichlorethylene, is applied. Spray-In-Vapor method is illustrated; dip painting is also available.
- 3. The hot, painted part emerges from the unit. Excess solvent quickly evaporates, leaving part completely dry (when lacquers are used), or ready for a short baking step (when curing paints are used).

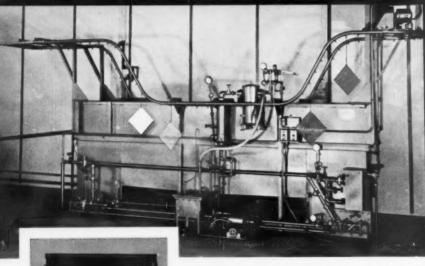
a single unit drastically reduces equipment size; does away with drip pans; and eliminates the need for a dry-off oven. It also permits close to 100% recovery of paint over-spray and excess solvent for reuse. The amount of "Triclene" solvent recovered from the painting phase will often be enough to run the entire degreasing operation! Nonflammability means greater plant safety, lower insurance rates and less investment for fire protection equipment. These advantages result in substantial cost savings as shown in the comparison at right.

vapor degreasing and painting system is ready now for general commercial use. A variety of high-quality industrial paints based on "Triclene" trichlorethylene is available. Arrangements can be made to test-paint your parts in demonstration units. (See postcard on back cover.)

PAINT continuously.



in a single medium of nonflammable Triclene® trichlorethylene



INWH KING

Demonstration unit for Degreasing/Spray-In-Vapor Painting now in operation at G. S. Blakeslee & Co., Chicago.

This "Lawn King" lawnspreader is now being dip painted commercially using an air-dry "Triclene" thinned paint.

QUALITY Of WORK-Production experience shows excellent appearance and uniformity of film thickness-even on complex parts. Generally, results are equivalent or superior to those obtainable with conventional dip or flow-coat processes.

TOTAL COSTS

EXAMPLE:

Work: Steel Shelves Area Painted: 4,200 sq.ft./hr.

CONVENTIONAL METHOD

Alkali washing, dip painting, oven drying steps.

Total Finishing Cost \$48.40/hr

\$169,000 Cost-\$61,000)

Total Operating Area, Sq. Ft. 1,640

"TRICLENE" FINISHING

Integrated "Triclene" Degreasing and Spray-In-Vapor Painting System.

Total Finishing Cost \$38.00/hr

\$94,000

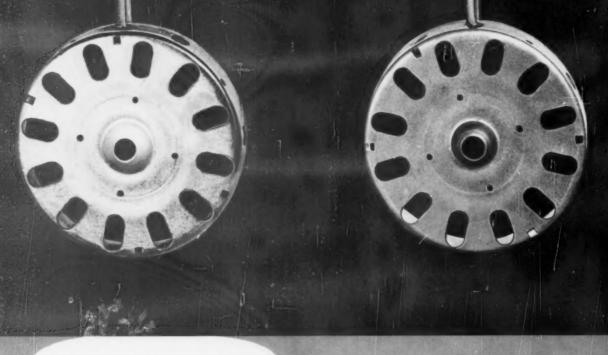
(Approx. Equipment Cost-\$30,000)

Total Operating Area, Sq. Ft.

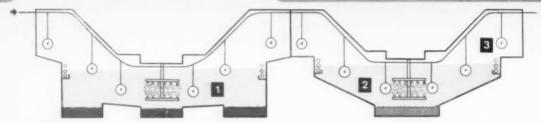
If you're planning to expand or modernize your operation, consider all of the advantages of a "Triclene" Cleaning and Painting System. Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Finishing for your needs. Fill out postcard on the back page.

Now it is possible to ...

CLEAN—PHOSPHATIZE



Du Pont "Triclene" Finishing System #2



Vapor degreasing and phosphatizing

PRESENT STAGE OF DEVELOPMENT-

After years of research, Du Pont has developed a new anhydrous phosphatizing method based on trichlorethylene. This recently announced development now makes possible linking of the "Triclene" Degreasing and Painting Processes with a compatible anhydrous phosphatizing process.

Although there are two successful full-scale test installa-

tions now in operation, "Triclene" Phosphatizing will not be commercially available until mid-1960. This will permit Du Pont to complete extensive field testing of the process. Those who wish to explore the possibility of participation in the field test program, or who wish to plan for future modernization, can evaluate "Triclene" Phosphatizing now.

This "Triclene" System combines vapor degreasing and dry phosphatizing; requires just two compact units.

A soiled metal part enters the two-stage system (No. 1 above) where it is thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing. The part then enters the phosphatizing stage (2) where it is treated in the anhydrous phosphatizing composition. When the phosphatized part emerges from the trichlorethylene

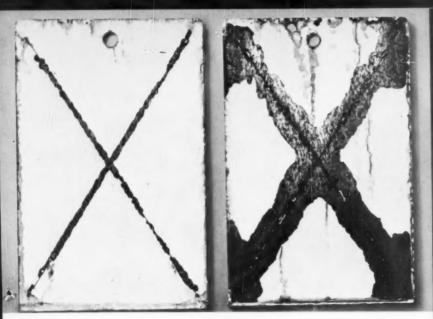
vapor (3) the solvent evaporates and the part is completely dry and ready for "Triclene" Painting, conventional painting, or in-plant storage or shipping.

—Anhydrous "Triclene" Degreasing/Phosphatizing takes as little as one-half the time and space of conventional wet systems. Heat requirements are reduced sharply and no dry-off step is needed prior to painting. These advantages result in substantial cost savings as shown in the comparison at right.

PAINT continuously...



in a single medium of nonflammable Triclene® trichlorethylene



Standard salt-spray exposure test shows quality of "Triclene" phosphatizing: The steel panel on the left was cleaned and phosphatized in a "Triclene" Finishing System and compared with unphosphatized-painted steel after standard salt-spray exposure for 600 hours. As indicated by the minimum corrosion at the scribe mark, the "Triclene" Phosphatized panel shows significantly improved finish performance.

phosphate conversion coating with improved corrosion resistance. In addition, the phosphate coating alone is remarkably resistant to rusting. This unique property benefits the steel fabricator who wishes to store or ship his parts prior to painting.

TOTAL COSTS

EXAMPLE

Work: Steel Shelves Area Painted: 4,200 sq.ft./hr.

CONVENTIONAL METHOD

Alkali washing, "wet" phosphatizing, oven drying steps.

Total Cleaning/ Phosphatizing Cost...\$12,00/hr

Total Investment
Cost \$73,600
(Approx. Equipment
Cost—\$33,000)

Total Operating Area, Sq. Ft. 760

"TRICLENE" FINISHING

"Triclene" Degreasing / Phosphatizing System.

Total Cleaning/
Phosphatizing
Cost \$8.30/hr

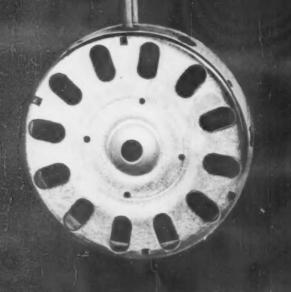
Total Investment
Cest \$45,500*
(Apprex. Equipment
Cost—\$27,000)

Total Operating Area, Sq. Ft. 456

The relative cost advantage for the highproduction system illustrated is also attainable with smaller operations.

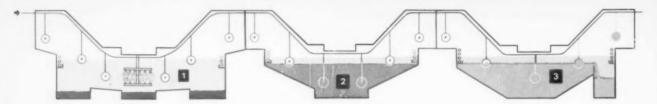
If you're planning to expand or modernize your operation, Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Degreasing and Phosphatizing for your needs. Fill out postcard on the back page. Now it is possible to ...

CLEAN—PHOSPHATIZE





Du Pont "Triclene" Finishing System #3



Vapor degreasing, phosphatizing* and painting

This is the complete "Triclene" Metal Finishing System—the ultimate in processing efficiency.

A soiled metal part enters this three-stage unit (above) and is: (1) thoroughly cleaned by trichlorethylene vapor-spray-vapor degreasing . . . (2) phosphatized during one short immersion in the phosphatizing solution . . . (3) dip painted with "Triclene" Paint Grade trichlorethylene thinned paint. Finished part emerges from the unit completely dry when lacquer is used or ready for a short baking step in the case of curing paints. (Spray-In-Vapor painting, not shown, is available.)

—The complete Du Pont "Triclene" Finishing System consists of three compact steps. (If baking enamels are used, a fourth but shortened baking step is required.) Conventional systems take up to 12 steps to do the same job. Nonflammable "Triclene" Finishing cuts in-

surance and fire protection costs—safeguards plant investment. The lower equipment costs and heat and floor space requirements all result in appreciable savings, as shown in the cost comparison at right.

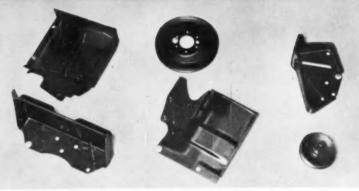
esses into one complete system produces a finish which exhibits improved adhesion and corrosion resistance, and excellent appearance.

*Present Stage of Development: Although a large automotive manufacturer is now using the complete "Triclene" Finishing System, the phosphatizing stage will not be available for wide commercial use until mid-1960. This will permit Du Pont to complete field trials on the "Triclene" Phosphatizing Process. Those who wish to explore the possibility of participation in the Field Test Program, or who are planning future modernization, can evaluate "Triclene" Phosphatizing now. (Fill out postcard on back page.) As stated previously, "Triclene" Degreasing and Painting are commercially available now.

PAINT continuously...



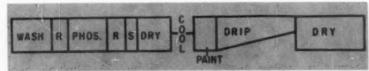
in a single medium of nonflammable Triclene® trichlorethylene



 These automobile engine production parts were vapor degreased, phosphatized and painted in a "Triclene" System similar to the one diagramed at left.

Compare Operating Areas

CONVENTIONAL METHOD requires 1,960 sq. ft.



"TRICLENE" FINISHING requires 695 sq. ft.



TOTAL COSTS

EXAMPLE:

Work: Steel Shelves Area Painted: 4.200 sq.ft./hr.

CONVENTIONAL

Alkali washing, wet phosphatizing, dip painting, oven-drying steps.

Total Finishing Cost...\$54.30/hr

Total investment
Cost\$200,000
(Approx. Equipment
Cost—\$73,000)

Total Operating Area, Sq. Ft.1,960

"TRICLENE" FINISHING

Vapor degreasing, phosphatizing, painting.

Total Finishing Cost. . \$41.70/hr

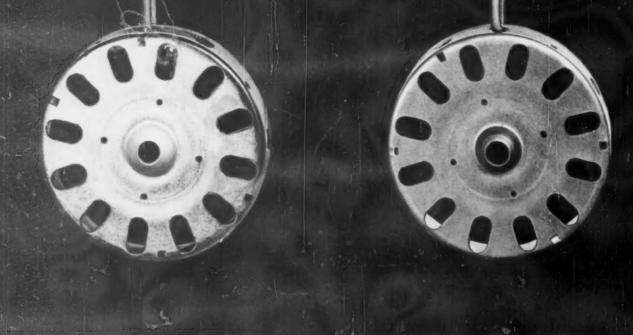
Total Investment
Coat\$122,000
(Approx. Equipment
Cost—\$42,000)

Total Operating Area, Sq. Ft. 695

If you're planning to expand or modernize your operation, consider all of the advantages of a complete "Triclene" Finishing System. Du Pont will be glad to help you make a comparative Cost Analysis and to evaluate "Triclene" Finishing for your needs. Fill out postcard on the back page.

Now it is possible to ...

CLEAN—PHOSPHATIZE



Here's what to do
if you are
interested in
evaluating

FINISHING

TRICLENE"

for your operation

Fill out and return the postcard at right. If you indicate a general interest, Du Pont will mail you technical literature describing the processes; if you indicate a specific or immediate need for evaluation, Du Pont will initiate the following evaluation program:

1 Finishing Analysis

Du Pont will provide you with detailed process literature and a Finishing Data Sheet which, when filled out by you, will give Du Pont the information needed to answer these three important questions:

- 1. Will "Triclene" Finishing maintain or improve your quality standards?
- 2. Is "Triclene" Finishing mechanically applicable in your particular case?
- 3. What cost advantage can you expect to realize from adoption of a "Triclene" Finishing System?

Preliminary answers to these questions will be presented in a complete *Finishing Analysis* which will include estimates of equipment size and cost plus a confidential "High-Spot" finishing cost comparison of the recommended "Triclene" System with the equivalent conventional system.

PAINT continuously...



in a single medium of nonflammable Triclene® trichlorethylene

2 Product Evaluation and Equipment design

If Du Pont's Finishing Analysis shows that a "Triclene" Finishing System appears applicable to your particular operation, Du Pont will then make arrangements to supply you with panels and parts necessary for you to evaluate the finish produced by the "Triclene" System. Du Pont will then work with the paint and equipment manufacturers to translate laboratory-scale results into a well-designed full-scale system.

3 Help in Start-up

When you install equipment for "Triclene" Finishing you can count on Du Pont assistance through the important startup period. Du Pont will work with you and your paint and equipment suppliers—will be glad to advise on installation, start-up and operating procedures.

4. Follow-through Service

You can obtain continuing Du Pont service after your "Triclene" System is in operation. A trained Du Pont representative will check with you regularly . . . and will be available when you need technical help.

Fill out this card and mail to Du Pont

I'm interested in evaluating DuPont"Triclene"Finishing for

- ☐ CLEANING ☐ PHOSPHATIZING ☐ PAINTING
- Our Company would consider replacement of existing equipment if we can be shown economic justification. Please send me your Finishing Data Sheet.

Please fill out completely:

Describe parts you finish_____

Type of process you now use for:

- Metal cleaning
- Phosphatizing
- Painting.

Name____

Position.____

Firm____

Address

City_____State____

DuPont makes two trichlorethylene products for use in "Triclene" vapor degreasing and painting

1. "Triclene" D Metal Degreasing Grade trichlorethylene-long recognized as the "standard of the industry". Its consistent high quality means top performance under all operating conditions. Reason: an exclusive combination of neutral stabilizers that resist deteriorating influences, thus assuring longer solvent life. "Triclene" D leaves parts bright and clean, free from deposits, staining, etching; keeps degreaser coils free of sludge; reduces costly downtime and maintenance. "Triclene" D is easily recoverable for reuse.

2. "Triclene" Paint Grade trichlorethylene was especially developed to serve as the thinner for a new class of industrial paints for use in Du Pont's "Triclene" Painting Processes. This special grade of nonflammable trichlorethylene contains a new (neutral) stabilizer formulation which minimizes gelation at process temperature and avoids discoloration of the lightest paint shades. At the same time it maintains the same high standard of stability for which Du Pont's degreasing grade trichlorethylene is well known and can be recovered for reuse in degreasing operations.

NOTE: Du Pont's "Triclene" Phosphatizing Grade trichlorethylene, which is now under field test, will be commercially available in mid-1960 when the phosphatizing process will be ready for general use.

Metal degreasing and paint grades of "Triclene" trichlorethylene are available now from any of these Du Pont distributors:

ARIZONA Western Chemical & Mfg. Co.

CALIFORNIA Atlas Mfg. & Chem. Co. Atlas Mfg. & Chem. Ce.
Blaren Industries
L. H. Butcher Co.
Currier Company
Hanson-Van Winkle-Munning Co.
Chas. F. L'Hommedieu & Sens Co.
Los Angeles Chemical Co.
Reess Supply Co., Inc.
Western Chemical & Mfg. Co.

COLORADO Braun-Knecht-Heimann Co.

CONNECTICUT Crane Equipment & Supply Co. Enthone, Inc.

> Chlorine Wilmington

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FILL OUT REVERSE SIDE AND MAIL

Hubbard-Hall Chem. Co. Mac Dermid, Inc.

FLORIDA Biscayne Chem. Labs, Inc. Lenfesty Supply Co.

GEORGIA McKesson & Robbins, Inc.

ILLIMUIS
Central Solvents & Chems. Co.
Dico Co., Ltd.
Industrial Oil & Chem. Co.
McKesson & Robbins, Inc.
The Udylite Corp.

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WILL

Huosier Solvents & Chemicals Corp. Wm. Lynn Chemical Co., Inc. Stevens Co.

IOWA Dico Cerp., Ltd. Kennedy & Parsons Co. McKesson & Robbins, Inc.

McKesson & Robbins, Inc.

KENTUCKY

Dixie Solvents & Chemicals Co.

Southern Solvents & Chemicals Co.

Chemical Sales & Service Co., Inc.
Doe & Ingalis
Eastern Chemicals, Inc.
Hamblet & Hayes Co.
Howe & French, Inc.
McKesson & Robbins, Inc.
Textile Aniline & Chem. Co.
Worcester Chemical Distributors, Inc.

MICHIGAN Carrier-Stephens Co. Eaton Chemical & Dyestuff Co. Ecclestone Chemical Ce., Inc. Hanson-Van Winkle-Munning Co. The Udylite Corp. Western Solvents & Chemicals Co. Wolverine Solvents & Chemicals Co.

W. D. Forbes Co. Lyon Chemical Co., Inc. McKesson & Robbins, Inc. Worum Chemical Co.

MISSOURI Jenkins-Guerin, Inc. Missouri Solvents & Chemicals Co.

McKesson & Robbins, Inc. NEW HAMPSHIRE New England Chemical Supply Co.

Brown Chemical Co. Chemical Solvents, Inc. Dooner & Smith Chemical Co. McKesson & Robbins, Inc.

Buffalo Solvents & Chem. Corp. Duso Chemical Co., Inc. Eastern Chemicals, Inc. Empire Electroplating Supply Co.

Enequist Chemical Co. McKesson & Robbins, Inc. Riverside Chemical Co., Inc. The Udylite Corp. West Side Corp.

DHIO
Amsco Solvents & Chemicals Co.
The Bison Corp.
Wm. Buchanan Supply Co.
Farley Chemical & Solvents Co.
Industrial Chemical Products Co.
Ohio Solvents & Chemicals Co.
Pol-O-Plate Products
Superior Chemical Products Co.
Thomson Chemical Co.
Toledo Solvents & Chemicals Co.
The Udylite Corp.

OREGON L. H. Butcher Co.

PENNSYLVANIA PENNSYLVANIA
Belco Supplies, Inc.
Carman-Pittsburgh
Chemiclene Corp.
Fort Pitt Chemical Co.,
Industrial Solvents & Chemicals Co.,
McKesson & Robbins, Inc.,
Merchants Products Corp.,
George A. Rowley Co., Inc.
Textile Chemical Co.,
The Udylite Corp.

RHODE ISLAND American Chemical Works Borden & Remington Co. Brian Supply Co. Conley & Straight, Inc. John D. Lewis, Inc.

TEXAS
Texas Selvents & Chemicals Co. UTAH L. H. Butcher Co.

VIRGINIA Phipps & Bird, Inc.

WASHINGTON L. H. Butcher Co.

WEST VIRGINIA
Pannsylvania & W. Virginia Supply Corp.
W. T. Rife & Co., Inc.

WISCONSIN
Donald Sales & Mfg. Co.
McKesson & Robbins, Inc.
O'Donohue Sales Co.
Wisconsin Solvents & Chemicals Corp.

NEW YORK

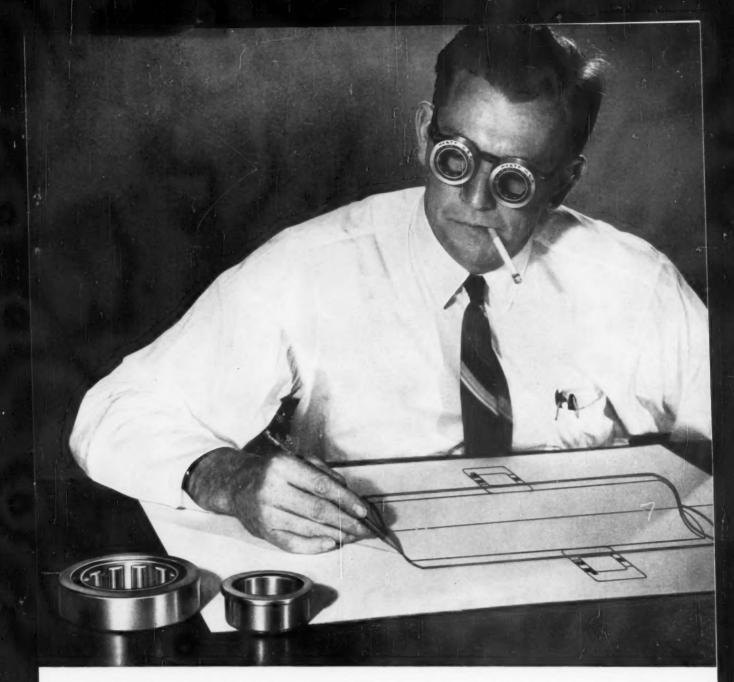
"TRICLENE" FINISHING



BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

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IRST ERMIT WILMINGTON,



YOU GET BIGGER SHAFTS IN THE SAME SPACE WHEN YOUR "SPECS" READ HYATT

To gain more space, simply eliminate the separable race from a Hyatt Hy-Roll bearing. For Hyatt rollers will operate directly on any shaft or bore that you've hardened and ground to bearing specifications. But, first be sure you're using Hy-Roll bearings. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

Replacement bearings available HY-ROLL BEARINGS through United Motors System and its authorized bearing distributors.

IN ROLLER BEARINGS HYATT IS THE WORD FOR M RELIABILITY



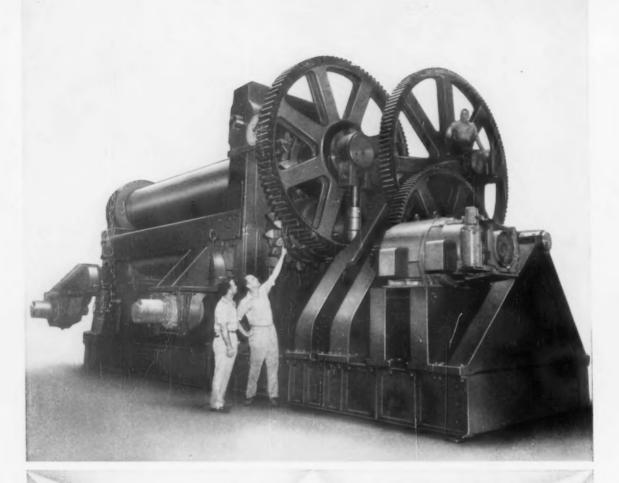


PLATE BENDING ROLLS INITIAL PINCH TYPE

Capacity to 6 inch plate cold
THE LARGEST EVER BUILT

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TOCCO Induction Heating unit and SWIFT-OHIO press mechanism work together for better, flashfree buttwelding of pipe and tubing.



with TOCCO Induction Heating

Now, in less than a minute you can get flash-free, smooth joints on any size pipe, regardless of its diameter or wall thickness.

Conventional buttwelding methods produce strong, sound joints but leave a brittle flash inside or outside the pipe. Inside flash can seriously impede fluid flow. Particularly on long lengths of pipe, removal of this inside flash is a real production headache—time consuming and expensive.

Whether your production bottleneck involves buttwelding, soldering, brazing, heat treating or forging, it pays you to investigate TOCCO as an economical way to do it better, faster and at lower cost.



THE OHIO CRANKSHAFT COMPANY

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Big Three's Little Three

reater Strength for Maximum





Each time a trio of these new cars rolls off the assembly lines at Ford, Chrysler Corporation and Chevrolet, another set of 67 Malleable parts goes into action to give American drivers more dependability, convenience and economy.

Valiant, Corvair and Falcon Use **Greater Proportions of Malleable Iron** Than the Three Conventional Cars!

Brand new from tread up, the Corvair, Falcon and Valiant are the result of intensive investigation, engineering and testing . . . all done to produce lighter, more economical cars without sacrificing the safety and convenience demanded by the American public.

To accomplish this, the automobile industry's

These companies are members of the



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Connecticut Mall. Castings Co., New Haven 6 Eastern Malleable Iron Co., Naugatuck New Haven Malleable Iron Co., New Haven 4

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Rely On MALLEABLE

with Less Weight Operating Economy....





three newest creations use more Malleable in proportion to total materials than all other models of the same manufacturers. Why? Malleable provides more strength per dollar than any other metal, ferrous or non-ferrous. Malleable castings have more strength per pound than "light" metals. Being the most machinable of all ferrous metals of similar properties, Malleable speeds production . . . produces better parts. Malleable castings have proved uniquely dependable for critical applications in millions of cars now on the highways.

How many places are there in your operations where Malleable castings can improve your products and reduce your costs? Check now . . . send drawings or an outline of your requirements to any of the progressive Malleable castings producers who display this symbol-

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Union Commerce Building, Cleveland 14, Ohio

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Central Fdry. Div., Gen. Motors, Saginaw

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NEW YORK Acme Steel & Mall. Iron Works, Buffalo 7

Frazer & Jones Company Division
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Columbus 16
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National Mall. and Steel Castings Co., Cleveland 6 PENNSYLVANIA
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Lehigh Foundries Company, Easton Meadville Malleable Iron Co., Meadville Pennsylvania Malleable Iron Corp., Lancaster

TEXAS Texas Foundries, Inc., Lufkin

WEST VIRGINIA

West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN

Chain Belt Company, Milwaukee 1 Federal Malleable Company, Inc., West Allis 14 Kirsh Foundry Inc., Beaver Dam Lakeside Malleable Castings Co., Racine Milwaukee Malleable & Grey Iron Works, Milwaukee 46

New Aluminum Engine Focuses Basic Agreement in

Increased use of aluminum by ALL automobile manufacturers proves that the experts agree on this major point: "big" car or "small" car... the more aluminum the more EFFICIENCY, ECONOMY, PERFORMANCE, LASTING BEAUTY, VALUE

America's newest compact cars are here.

And so is the aluminum engine, made of Reynolds Aluminum.

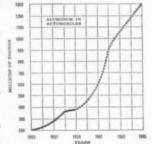
Now you have a new choice in American automobiles: conventional front engine or new rear engine. And this is the choice that has caused some discussion, even controversy, that may obscure a basic fact.

The fact is that the automobile industry is in harmonious agreement on the advantages of aluminum. How aluminum is used—to reduce dead weight, or cut manufacturing costs, or provide decorative trim of lasting and rust-free

beauty—may vary from one manufacturer to another.

But the agreement on the advantages of aluminum is demonstrated by the record—the continuous increase in the use of aluminum by every automobile manufacturer.

The automobile experts have demonstrated that



they agree on this major point: "big" car or "small" car, the more aluminum the more efficiency, economy, performance, lasting beauty, and value.

Aluminum: Versatile and Rugged

The automotive engineers who have been responsible for this increase in the use of aluminum in automobiles are familiar with aluminum's advantages. They use it in their homes—as Reynolds Wrap and as cooking utensils, for example. They know aluminum as a most versatile and rugged metal, far stronger than steel, pound for pound.

They specify it for pistons, perhaps the hardest working parts in any automobile. They see it in use as the aircraft metal—for airplane engines, airframes, and wings that carry tremendous loads. They see aluminum dump trucks and railway freight cars taking terrific poundings and



REYNOLDS

Attention on Major Point of Automobile Industry

making their extra payloads profitable.

And they work with the armed services in making aluminum-armored tanks, for which aluminum's lightness provides superior mobility, and aluminum's toughness provides superior protection.



Efficiency's Greatest Enemy: Excess Weight

These automotive engineers know that the greatest enemy to efficiency is excess weight. And they fight that enemy with aluminum, which weighs only one-third as much as steel or copper. By reducing dead weight with aluminum, they improve efficiency. And thus they improve performance and economy. And safety.

For example: If a 4,000 pound car is powered with 200 horsepower, that's 20 pounds per horsepower. If the weight of the car can be reduced by 1,000 pounds, the burden, the load to push around, is only 15 pounds per horsepower. That's less work for the engine. Less work for the brakes. A more efficient automobile because of reduction in excess weight.

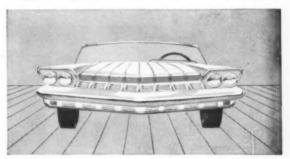
And the way to take off weight is to use aluminum.

So the new lightweight aluminum engines, made with Reynolds Aluminum, represent a long stride forward along the road the entire automobile industry is traveling—the aluminum road that leads to greater efficiency, economy, and value.

There will be other aluminum engines in the years to come—some in front, some in rear, some air-cooled, some liquid-cooled, depending on the needs of each particular model design.

The Automotive Future Is Bright . . . With Aluminum

And there will be other uses of aluminum to reduce weight and increase value: Aluminum bumpers... they'll be stronger than the strongest steel bumpers of today, yet they'll weigh much less, and they'll never rust or flake or peel; aluminum framing members... strong, yet light in weight; aluminum roof panels, whose light weight will lower the center of gravity; aluminum wheels, with integral wheel, brake drum, and wheel cover to improve



braking action and reduce tire wear; aluminum hoodgrilles, designed as single integral stampings to reduce manufacturing costs.

As the leading supplier of aluminum for automobiles, and as the exclusive supplier of aluminum for America's first mass-produced aluminum automobile engine block, we are proud to be working with the pioneers who are contributing so much to automotive progress.

We're proud that all the great new 1960 cars are made with Reynolds Aluminum. And our current expansion program is proof positive that we are preparing for the even greater use of aluminum in the automobiles of the future. Reynolds Metals Company, P.O. Box 2346-JK, Richmond 18, Virginia.

ALUMINUM

Watch Reynolds TV shows—"ALL STAR GOLF"—
"BOURBON STREET BEAT" and "ADVENTURES IN PARADISE"—ABC-TV



NOW BULLARD BYNATROL FIRST FULLY POWER-CONTROLLED

Dynatrol V.T.L. has Bullard's new Dynamic Precision Control...a fully powered machine tool control system which pays off in greater production.

Dynamic Precision Control keeps the tool in the cut more of the time...cuts time between cuts...increases the operating speed and output of the machine.

Dynatrol provides **infinitely variable feed rates** throughout the full range and **variable traverse rates** from zero to nine feet per minute. Dynatrol provides complete flexibility of control both in and out of the cut. Feed rates may be advanced or retarded while the machine is cutting to obtain maximum tool performance and productivity.

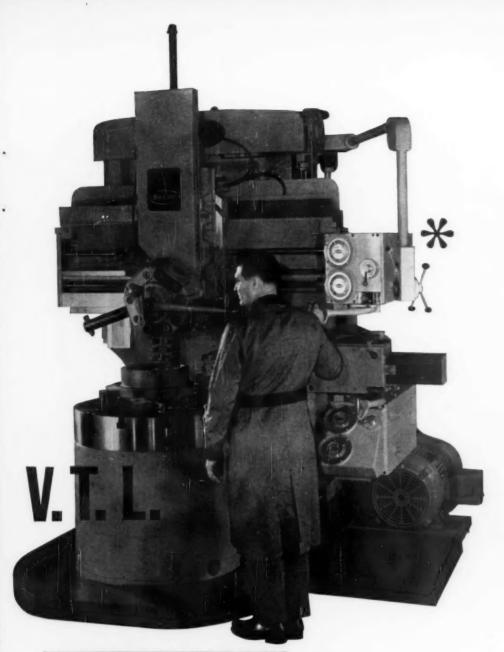
Dynatrol provides single lever control for all motions of each head. Variable traverse rates, feed engagement and full directional motions are obtained through one lever located in the most advantageous position for the convenience of the operator. Equally simple remote controls are available for machines of all sizes. Nine sizes from 26" to 124" table diameter.

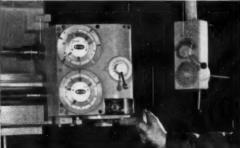
Send to The Bullard Company, Bridgeport 9, Connecticut, for detailed catalog.

Telephone EDison 6-2511. *Trademark*



"YOU CAN'T







This is the control center of the new Dynatrol V.T.L. Feed rates, infinitely variable from zero to maximum, are directly geared to table rpm. A simple pendant controls start, stop and speed of table.

High-Spot Features of the DYNATROL® V.T.L.

Dynatrol V.T.L. is POWER CONTROLLED

By lever or pendant—it's your choice—head traverse rates can be varied from zero to nine feet per minute. Easy-to-read dials show exact position.

Feed selector gives infinitely variable feed rate without interrupting the cut.

Dynatrol V.T.L. is VERSATILE

Available equipment includes:

Bullard variable speed drive for infinitely variable table speeds throughout the full range with no loss of usable horsepower.

Fully automatic operation by Bullard Man-Au-Trol or point-to-point or continuous path numerical control systems.

Unique Size-Au-Trol* for accurate positioning of all heads. Contouring attachments: Hydraulic, electronic or electro-hydraulic. Four- or five-sided power-indexing turret heads. Thread cutting, drum scoring and angle turning attachment. Power-operated chucks.

Dynatrol V.T.L. is COMPACT

The new Bullard Dynatrol V.T.L. is compact in design, rigid in construction, lower in height, reduced in floor area.

Dynatrol V.T.L. is EASY TO MAINTAIN

Automatic lubrication throughout... fewer parts...fewer adjustments... easily accessible.

BEAT A BULLARD"



Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

Stands to reason that the leaders in forge manufacture for over 60 years should be the best source for forge repair.

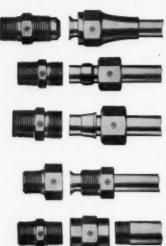
Regardless of who made it, or how badly it's cracked, broken or worn, your forging hammer will recover most quickly at Erie Foundry's Rebuilding "Hospital". Write for the complete story.



THE WORLD'S GREATEST NAME IN FORGING SINCE 1895

ERIE 1, PA.

brass tube fittings



S.A.E. 45° FLARE
USE with copper, brass, aluminum, steel and plastic tubing. U.L. listed;
A.G.A. approved. Meets SAE Hydraulic standards and A.S.A. and
A.S.M.E. codes. PRESURE RATING:
up to 3000 p.s.i. Sizes: ¼" to ¾".

up to 3000 p.s.i. Sizes: ½" to ¾". COMPRESSION
USE with copper, brass, aluminum and plastic tubing. U.L. listed; A.G.A. approved. Meets SAE Hydraulic Tube Fittings Standards and A.S.A. and A.S.M.E. codes. PRESSURE RATING: up to 2000 p.s.i. depending on O.D. of tube. Sizes: ½" to ¾".

SELF-ALIGN®

VSELT-ALIGN®0
USE with copper, brass, aluminum and plastic tubing. No flaring, soldering, welding, or special tube preparation needed. PRESSURE RATING: up to 2000 p.s.i. Sizes: ½" to ¾".

INVERTED FLARE

USE with copper, brass, aluminum, steel and plastic tubing. Meets SAE Hydraulic Tube Fittings and A.S.A. and A.S.M.E. codes. PRESSURE RATING: up to 3000 p.s.i. Sizes: 1/4" to 3/4".

PIPE FITTINGS
USE with brass or steel pipe. Meets specifications of SAE TPHL Fittings Committee. PRESSURE RATING: up to 5000 p.s.i. Sizes ½" to ¾".

forged steel fittings



ERMETO HYDRAULIC TUBE FITTINGS

Most dependable high pressure fitting in the world...easiest installation. FOR FLARELESS TUBE SYSTEMS. No flaring, threading, welding or soldering. Available with carbon steel; stainless steel; cadmium plated or Weathercote finish. Standard Sizes: 1/8" through 2". Pressure Ratings: up to 10,000



FLARE-TWIN HYDRAULIC TUBE FITTINGS
SAE 37° FLARE (J.I.C.) STEEL FOR FLARE TUBE SYSTEMS.
No threading, welding or soldering. Two-pc, and three-pc, carbon and stainless steel with cadmium plated or Weather-cote finish. Standard sizes: ½" through 2". Pressure Ratings: up to 10,000 p.s.i.

the **WEATHERHEAD** symbol is your assurance of SERVICE, QUALITY and DEPENDABILITY in all industrial hose and tube fitting needs

tube working tools

Designed to make fast, easy work of every tubing job. We offer a complete line of low cost, quality made tools for cutting, bending and flaring tubing up to 3/4" in O.D.



Spring-Type Bender Mechanical Bender



nose

Available in over 20 different types for any industrial application up to 10,000 p.s.i. pressures and sizes from V_6 " to 2" 1.D. Five standard hoses meet most requirements.



hose assemblies



Standard 2-pc. Reusable Ends





Reusable Steel Ends

Reusable Clamp-Type Ends



Permanently Crimped Ends

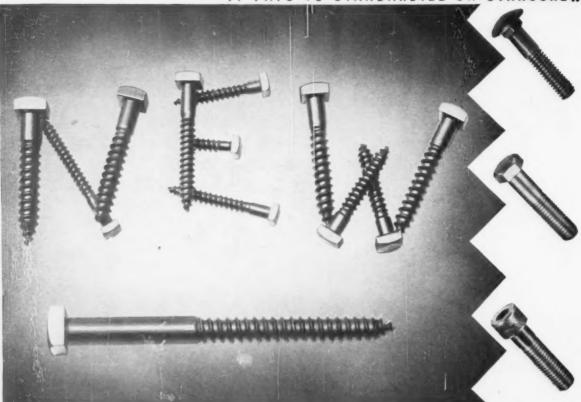


YOUR SINGLE SOURCE SUPPLIER OF ALL INDUSTRIAL HOSE AND FITTINGS NEEDS



FORT WAYNE DIVISION . Dept. IA-1, 128 West Washington Blvd. . Fort Wayne, Indiana

In Canada: The Weatherhead Co., Ltd., St. Thomas, Ontario



Lag Bolts Expand Stanscrew Line To Over 5,500 Different Fasteners

Hex machine bolts . . . carriage bolts . . . and now, a broad selection of lag bolts . . . all quickly available from Stanscrew.

These new gimlet point lag bolts, all with fullsized shanks, conform to ASA Standards and are produced to Stanscrew's rigid criteria of fastener quality. Almost 100 sizes are offered as stock items.

With lag bolts, the Stanscrew line now covers more than 5,500 standard catalogued fasteners . . . carefully developed to answer the overwhelming majority of American industrial needs. Included are socket, set, and cap screws . . . nuts . . . dowel and taper pins . . . pipe plugs . . .

studs . . . and, of course, Stanscrew's complete bolt series.

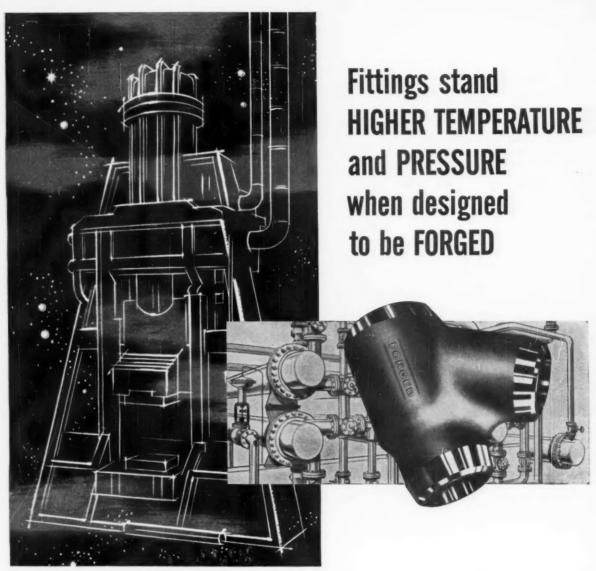
Each of these 5.500 fasteners is always in stock at three conveniently located plants. A rigidly enforced Stanscrew policy assures regular orders are shipped within 24 hours. This means your Stanscrew distributor can provide especially fast service on all occasions . . . and be particularly helpful in emergencies.

Your Stanscrew distributor will also be happy to arrange a visit from the Stanscrew fastener specialist. His recommendations on your assembly procedures can often result in significant savings. Why not call your Stanscrew distributor today?

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois



Modern steam-powered forging hammer

Vital fittings in refineries and chemical plants are forged, for only forgings can provide maximum strength required without excess weight. Fabrication is simpler, hanging and supporting are less expensive, life of fittings under severe operating conditions is extended.

The hammer-compacted metallurgical structure of forged parts gives superior performance in containing gases or liquids under high temperatures or pressures, vibration, high-velocity fluid flow and corrosion.

Design any vital parts to be forged...strength/weight ratios are higher, as-assembled costs are lower, performance is better. Literature to help you design, specify, and procure forged parts will be sent on request.

When it's a vital part, design it to be



Drop Forging Association • Cleveland 13, Ohio

Names of sponsoring companies on request to this magazine



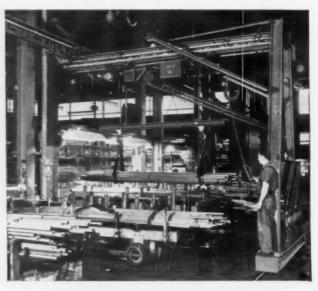
FOUR INTERLOCKED CRANES handle 100-foot long trusses in structural plant. Cranes are 5 tons capacity, 3-runway, 36 and 40 feet long. They operate individually or together as

units. Trusses are removed from jig and advanced to next location within a few minutes by two men operating crane control buttons.

TRAMRAIL IDEAS THAT



TRACK AND CRANE SYSTEM speeds automobile body fabrication. Tramrail cranes support spot-welding equipment and move assembled bodies between departments. Up to 105 bodies are produced per 8-hour day in this particular work area.



MOTORIZED GANTRY CRANE with spreader beam provides efficient handling in local area for bundles of tubing. Gantries can be hand-propelled, or partly electrified, or completely motorized like one illustrated.



EFFICIENT CRANE COVERAGE reduces time loss of skilled workers and expensive machine tools. Hand-propelled Tramrail cranes with electric hoists are an important factor in maintaining a profitable operation in this type of shop.

CUT COSTS...

Whatever your handling needs, most likely versatile Cleveland Tramrail can be adapted to solve them.

In nearly every segment of industry, various forms of Cleveland Tramrail equipment are being used to advantage. In fact, over 40,000 installations are serving 9,000 companies.

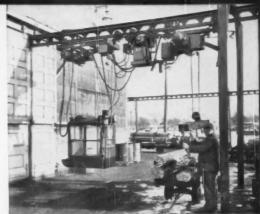
The equipment speeds production, saves floor space, improves safety, reduces floor congestion — and cuts costs tremendously.

Cleveland Tramrail consists of track, switches, carriers, hoists, grabs, etc., which can be combined in a thousand-fold ways to exactly suit your need. Illustrated here are a few random examples of how the equipment is being used. Cleveland Tramrail can be furnished for simple manual operation or with any degree of electrification, including fully automated systems.

A local Cleveland Tramrail sales engineer will be glad to discuss

overhead materials handling with you and show you installations at work in nearby plants. Why not get in touch with him? A card or letter to us will do the trick.

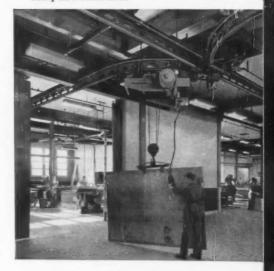
This large book is the greatest in its field. Contains a wealth of valuable information. Covers details of 143 outstanding installations. Has 426 large photos, 59 system layouts, 69 other sketches. Write for your free copy of "Cleveland Tramrail at Work" on your company letterhead. A nearby representative will deliver it without obligation.



RAISE-LOWER CAB CARRIER permits operator leaving cab at any point to attach hooks to materials to be transported. Floor help is unnecessary and costs are consequently held at a minimum. This unit operates both outside and inside of the building.



HAND PROPELLED CRANE with one-ton chain hoist provides overhead conveying and hoisting service at low cost. Operation is smooth and easy, with practically no maintenance.

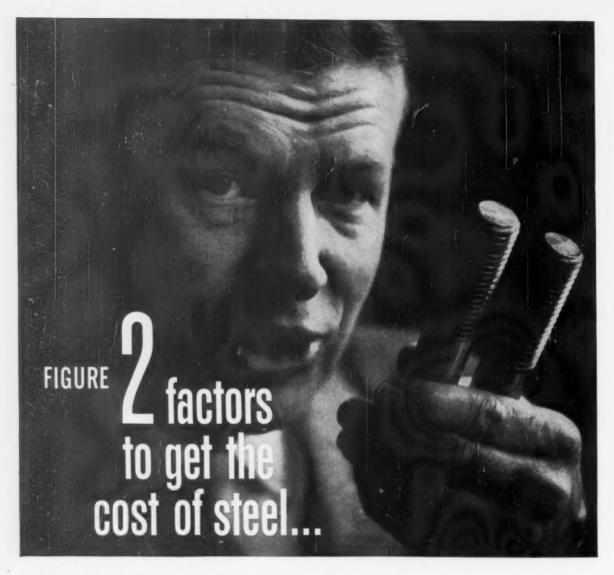


THREE-WAY TRACK SWITCH enables this tractor-driven 5-ton electric hoist carrier to travel to various parts of a plant. This is another example of the many handling arrangements possible with Cleveland Tramrail.

CLEVELAND TRAMRAIL DIVISION

THE CLEVELAND CRANE & ENGINEERING CO.

4804 EAST 290th STREET WICKLIFFE, OHIO



COST OF POSSESSION and delivered cost!

 The high cost of possession may surprise you. It has surprised many a smart, informed steel user.

When your Steel Service Center performs first cutting operations you save operating and capital costs of the equipment it requires. You get steel delivered quickly from stock, ready for use. You save costs of storage and handling. You cut scrap loss and wastage.

There's a nearby Steel Service Center set up to serve you, not only with steel, but with technical know-how.

If you are buying more than three months' inventory because you think it's a bargain, compare all of your costs with the cost and freedom from risk of buying from your Steel Service Center. For more information, get the booklet, What's Your Real Cost of Possession for Steel? from your Steel Service Center. Or write to Steel Service Center Institute, Inc., 540-D Terminal Tower, Cleveland 13. Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered Cost of capital: Inventory

Space

Equipment Cost of operation:

Space Materials handling Cutting & burning Scrap & wastage

Other costs:
Obsolescence

Taxes Accounting

TOTAL.

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

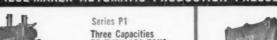
Per ton, cut-to-size, and delivered



..YOUR STEEL SERVICE CENTER

PRESSES—A COMPLETE LINE PIECE-MAKER AUTOMATIC PRODUCTION PRESSES TYPES AND CAPACITIES - M

SINGLE POINT, GAP TYPE, OPEN BACK





Inclinable 6 Capacities 12 THRU 60 TONS **Bulletin Section 1**

> Series 1 Inclinable Two Capacities 75 THRU 90 TONS **Bulletin Section 2**



KNUCKLE JOINT

Three Capacities 75 THRU 150 TONS **Bulletin Series P1**

> Series P2 Nine Capacities 20 THRU 300 TONS Four Widths Ea. Cap. Bulletin Series P2



Series 70 Fixed Base Four Capacities 45 THRU 90 TONS **Bulletin Section 3**

> Series B1 Fixed Base, Automatic Five Capacities 16 THRU 60 TONS Gap Press Bulletin



Series 90 Six Capacities 150 THRU 1000 TONS **Bulletin Series 90**

PRESSES

Series PMS2 **Five Capacities** 150 THRU 500 TONS Five Widths Ea. Cap. Request Specifications



Series G1 Fixed Base or Inclinable Four Capacities 75 THRU 250 TONS Bulletin Series G1

> Series 20 Deep Throat Type Three Capacities 15 THRU 35 TONS Gap Press Bulletin



HORNING PRESSES

Series 10 Eight Capacities 16 THRU 90 TONS Bulletin Series 10





HEAVY DUTY BLANKER

TWO POINT, GAP TYPE, OPEN BACK



Inclinable—Five Capacities 22 THRU 75 TONS 6 Widths Ea. Cap. Request Specifications

> Series 80 Fixed Base-Five Capacities 22 THRU 75 TONS 6 Widths Ea. Cap. Request Specifications



CLUTCH CONVERSIONS

Minster patented Combination Air Friction Clutch and Brake unit for clutch conversions increases production, reduces maintenance. **Bulletin CC57**



STRAIGHT SIDE PRESSES



Series S1 Twelve Capacities 50 THRU 600 TONS **Bulletin Series S1**

> Series S2 Ten Capacities 50 THRU 400 TONS Five Widths Ea. Cap. **Bulletin Series \$2**



IINSTER。

THE MINSTER MACHINE COMPANY MINSTER, OHIO

FIRST IN PRESS DESIGN





Series MS1 Three Capacities 300 THRU 500 TONS Request Specifications

> Series MS2 Five Capacities 150 THRU 500 TONS Five Widths Ea. Cap. **Bulletin Series MS2**



MINSTER MACHINE COMPANY MINSTER, OHIO

Gentlemen: Please send me a copy of Bulletin_ Name_ _ Title_ Company_

Nature of Product_

Production Increases of BURGMASTER 6 & 8 SPINDLE

These case histories have been selected to show the actual savings and advantages produced by various models of Burgmaster Turret Drilling, Tapping, and Boring machines including hand operated, automatic Hydraulic, and Automatic Tape Controlled 6 and 8 spindle models. The machine features responsible for these production increases are, collectively: Power Turret Indexing, Skip Spindles when desired, Pre-selective spindle speeds,

Pre-selective infinitely variable feeds, Pre-selective rapid approach and return, adjustable micro-depth stops, automatic cycles and tape controls. All machining operations are performed at the most efficient rate commensurate with fine finish, accuracy, speed, and longest tool life. Why not get the information on the Burgmaster that specifically suits your work? There is no obligation.

Case History I. BURGMASTER TAPE CONTROL TURRET DRILL

INCREASES PRODUCTION 440%



Company: Clifford Manufacturing Co.,

Div. Standard-Thomson Corp., Waltham, Mass.

Part: #347 Stainless Steel Valve Body.

Holding: Simple quick acting clamps.

Operations: 59, including Center Drill, Drill, Ream and C'Bore.
Former Method: Multi-drill set-up using Dowel Holding Fixtures.

Former Time: 2.7 hours.
Present Time: .5 hours
Production Increase: 440%.

Other Advantages: Accuracy far beyond the required tolerance, less

spoilage, finer finish, greatly reduced fixture

Case History II. BURGMASTER AUTOMATIC HYDRAULIC 6 SPINDLE TURRET DRILL INCREASES PRODUCTION 406%

Company: Part: Holley Carburetor Company, Warren, Mich. Fuel Control Bodies for Jet Engines—3 Parts.

Material: Aluminum Casting.

Holding: Simple Holding and Locating Fixtures.

Former Method: Single Spindle Drill Presses.

Production Increase: 406% average.

Other Advantages: One man runs 2 machines—quality is substantially improved—fewer rejections.





Write for Bulletin describing briefly the full line of Burgmaster Turret Drilling, Taping and Boring Machines. Detailed bulletins also available on each model. A 16mm sound film showing machines in operation is available from any office.

World's Largest Builder of Turret Drilling Machines



"O" Manual Power Index 1/4" Capacity



1C Manual Power Index 36" Capacity



28 Manual Power Index 36" Capacity



2BF Flange Mounte Power Index 36" Capacity



28H Automatic Hydraulic 34" Capacity



3BH Automatic Hydraulic 11½" Capacity



2BR Ram Type Radial Drill



28HT-38HT Automatic

440%, 406%, 277%, 300% & 300% TURRET DRILLING MACHINES

Case History III. BURGMASTER 8 SPINDLE AUTOMATIC HYDRAULIC TURRET DRILL INCREASES PRODUCTION 277%

Company:

Whittaker Controls-Div. of Telecomputing Corp., Lynwood, Calif.

Part: Holding: Aircraft Slide Fuel Valve Body. Special Air Indexing Fixture.

Operations:

8-including Bore, Groove, Chamfer, Face, Tap and

Bottom groove—accuracy +.000 -.002 On Turret Lathe.

Former Method: **Former Time:**

9 minutes. 3.25 minutes.

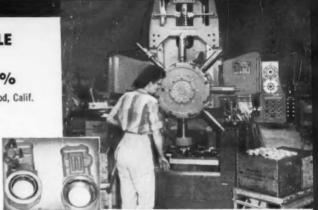
Present Time:

277%

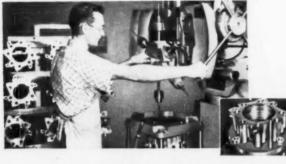
Production Increase: Other Advantages:

Greater accuracy maintained, and less scrap loss.

Does not require a skilled machinist.



Case History IV. BURGMASTER 6 SPINDLE RADIAL TURRET DRILL **INCREASES PRODUCTION 300%**



Company: Part:

Total Operations:

Holding:

Former Method: Former Time:

Present Time: Production Increase:

Other Advantages:

Convair (Pomona) a Div. of General Dynamics Corp. Aluminum Hydraulic Manifold for Terrier Missile. 96-including Drill, C'Sink, Ream, Chamfer and

Tap-to accuracies of ±.002' Special Fixtures with Drill Bushings.

4 and 6 spindle table drills.

11/2 hours. 1/2 hour. 300%

The total savings paid for the 6 Burgmasters in 2.04 years. Tool settings and cutting sequences are consistently and accurately repeated, dimensional consistency and closer tolerances are achieved.

Case History V. BURGMASTER 6 SPINDLE MANUAL TURRET DRILL INCREASES PRODUCTION 300%

Company:

Clayton Manufacturing Company, El Monte, California.

Tube Sheet for Heat Exchanger-361 Holes. Part:

Material: Holding: Mild Steel. 2" thick x 20 dia.

Special Hand Indexing Fixture.

Operations:

6 per hole, including Center Drill, Drill, Core Drill,

Ream, Radius, and Groove.

Former Method:

Radial Drill Press Costing \$20,000.

Former Time:

5 min. per hole using quick change Tool Holder.

Present Time: 1 min. 35 sec. per hole.

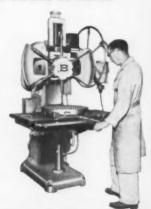
Production Increase: 300%

Other Advantages:

68% less machining time, the Burgmaster cost \$4822 and replaced a \$20,000 radial drill press. Note the

Burgmaster in this shop averages 25% to 68% time savings on every job.





BURG TOO

MANUFACTURING COMPANY, INC.

15001 South Figueroa Street, Gardena, California

FAculty 1-3510

DAvis 9-4158



BURGMASTER DIRECT SALES OFFICES:

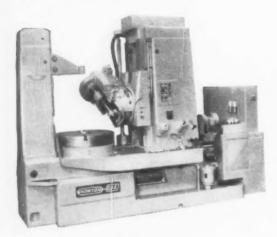
Ridgewood, N.J. 86 North Maple Ave. Gilbert 4-3002

Chicago 25, III. 4908 Lincoln Ave. LOng Beach 1-1178 Cleveland 7, Ohio 14706 Detroit Ave. ACademy 6-7030

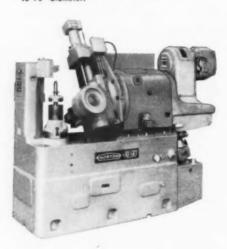
Detroit 37, Mich 13730 W. Eight Mile Rd. Lincoln 8-4333 San Francisco, Calif. 1341 Old County Rd. Belmont, Calif. LYtle 1-0309

Plus dealer representatives in other industrial centers.

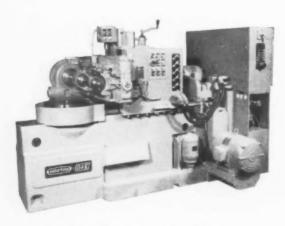
G & E Universal Gear Hobbers are available for commercial and precision production of spur and helical gears, up to 160" diameter.



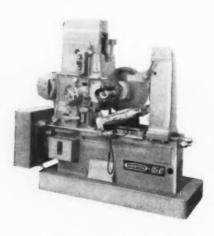
G & E 10HQ HOBLIQUE* Universal Gear Hobber is designed for high speed, high production hobbing of spur and helical gears up to 10" diameter.



Norton Welcomes G&E



G & E Worm Gear Hobbers are long established leaders for fly tooling or hobbing commercial and precision worm gears up to 100" in diameter.

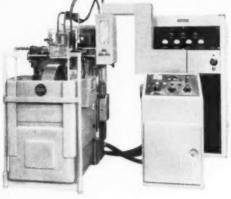


G & E Gear and Rack Cutting Equipment for automatically cutting a diversified range of spur and bevel gears, sprockets and racks.

G & E Delapena COLD HEAT Gear-Tooth Induction Hardener employs a revolutionary new process for hardening gear tooth profiles. A patented intensifier operating under water, consistently produces a uniform hardness pattern, and reduces distortion to an absolute minimum.



G & E Tool Room and Industrial Shapers meet every requirement for speed, accuracy and compactness on general work. Available in seven sizes from 14" to 36" stroke. Can be equipped with an hydraulic follower attachment.



... famous shapers
and gear cutting
machines join
fast growing
machine tool
family

The addition of the Gould and Eberhardt Division expands capacity and adds a variety of products to the Norton line to serve you better in the Machine Tool field.

The G & E machines shown here are popular leaders in the broad line that will continue in its entirety. Transferal of the manufacture of these machines to Norton headquarters is accompanied by the technical know-how that has made G & E a long established, highly valued supply source of metal cutting equipment.

At Worcester, production of G & E machines is assured the top quality standards that have made Norton the world's largest supplier of grinding machines and lappers.

Norton will be glad to help you select the G & E equipment you need for the results you want. For further information or for G & E parts, write NORTON COMPANY, Gould & Eberhardt Division, Worcester 6, Massachusetts.



Making better products
...to make your products better

Republic High-Performance Titanium for the X-15

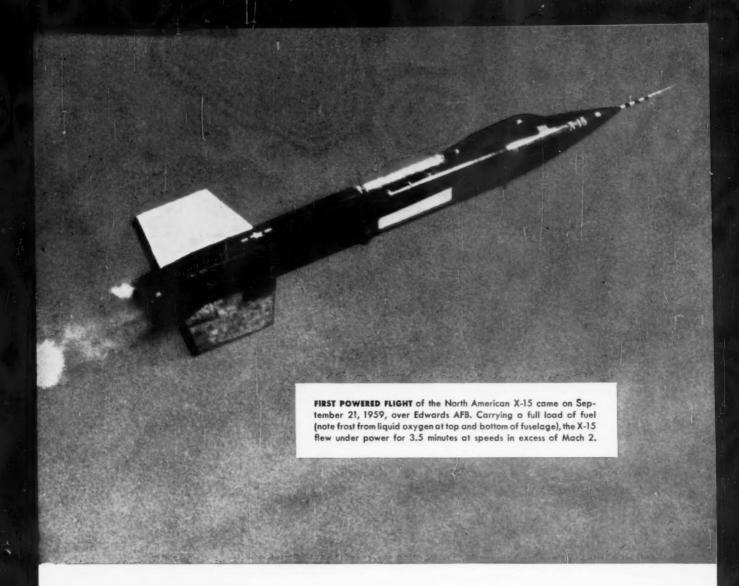
In a number of highly stressed components subject to extreme high and low temperature fluctuations, *high-performance* titanium in the X-15 Research Vehicle will help take man higher and faster than he has ever been before.

Republic Steel—a leading supplier of titanium, and the nation's largest producer of stainless and alloy steels—is supplying North American Aviation with Type 110A titanium for internal structures on the X-15 project.

Let us help you utilize *high-performance* metals to increase strength, resist heat, or trim weight. Write Republic Steel, Dept. IA -8591, 1441 Republic Building, Cleveland 1, Ohio.

Please indicate if you would like a titanium metallurgist to call.

REPUBLIC STEEL Where Steels are





REPUBLIC STAINLESS STEEL is used in leading edges of the Convair 880's vertical fin and horizontal stabilizer where anti-icing is accomplished through electrical heating of the metal. Use of Republic ENDURO® Stainless Steel increases strength and heat-resistance, permits thinner, lighter gages. Types 301 and 302 are readily formed into desired shapes by cold forming, drawing, and bending operations.

REPUBLIC'S NEW HIGH STRENGTH POWDER, TYPE HS6460

is ideal for sinterings of highly stressed components. Provides minimum tensile strength of 60,000 psi at 6.4 density as sintered...100,000 psi after heat treatment. Maximum of .004% shrinkage from die size at 6.4 density. Available in quantities up to and including 12 tons or multiples. Can be used with existing operating equipment.

REPUBLIC VACUUM-MELTED ALLOYS heat treated to tensile strength levels of 270,000 to 300,000 psi are produced in fifteen thousand-pound heats for missiles such as the Minuteman. Vacuum arc process minimizes segregation and center porosity. Nonmetallic inclusions are reduced in number and size. Transverse ductility at high strength levels is also greatly improved.



Made to Meet the Challenge of Acceleration





FREE DATA FILES

Allied Research

FOR THE DIAMONDS—SIGN OF FINISHING QUALITY

METAL FINISHING PROCESSES

A complete line of quality products and processes developed primarily as a result of helping manufacturers like yourself solve their metal finishing problems. If one of our present products does not meet your needs, we'll be glad to work with you to find an answer to your problem.



Coatings for Non-Ferrous Metals.

Clear Protective Coatings

Chemically Different
Plating Brighteners.

ARP Process chemicals.

EQUIPMENT AND COMPLETE SYSTEMS

for Metal Finishing

Process Engineered—Single pieces of equipment or all equipment necessary for a finishing operation—evaluated, designed, fabricated, installed and tested to match exactly your particular process. Ask about our Process Engineering Service.



WAGNER RECTIFIERS

Silicon and Selenium, built to exacting specifications for long life, irouble-free service.

WAGNER AUTO-LOADERS

for fast, economical transfer of racks and parts, conveyors to plating machines, between conveyors.

AUTOMATIC AND SEMI-AUTOMATIC PLATING MACHINES

BARRELS, TANKS and other equipment.

CHEMICALS AND SUPPLIES

Prompt service on a wide variety of daily-use necessities for the plating room, delivered from warehouse stocks strategically located in cities in metalworking areas.



FLAT TOP ANODES

in copper and zinc.

LECTROCOP FLAT COPPER ANODES

CADMIUM, WHITE BRASS AND TIN ANODES in most efficient shapes. Acid Replacements, Buffs, Chemicals, Cleaners, Maintenance Materials.

NICKEL RECASTING SERVICE

Ask your Allied Field Engineer about our Subscription Plan which combines your new nickel purchases with a service to recast your butts and spears, resulting in substantial savings.

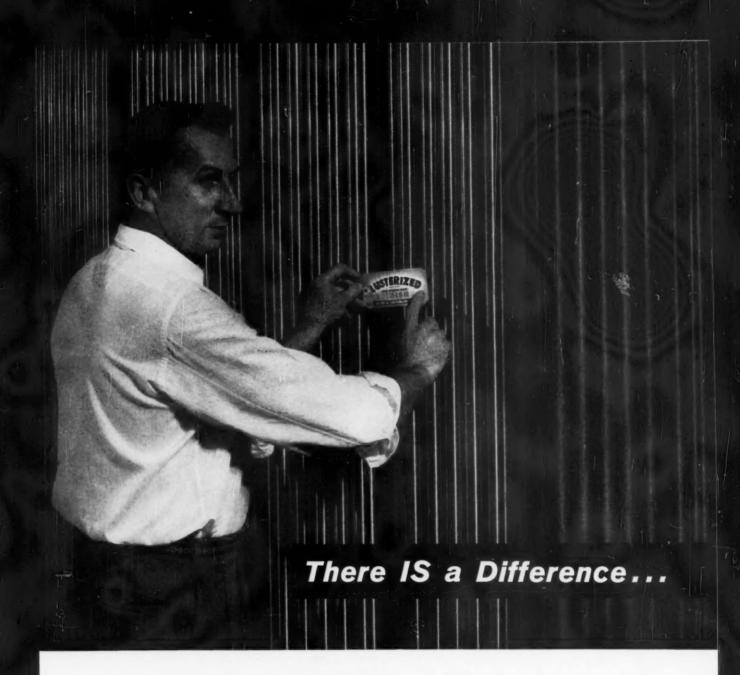


Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET BALTIMORE 5, MARYLAND

Branch Office: 400 Midland Avenue, Detroit 3, Michigan

Chemical and Electrochemical Processes, Anodes, Rectifiers, Equipment and Supplies for Metal Finishing. WRITE TODAY FOR COPIES of these useful files describing technical details of our complete line, OR, phone your Allied Field Engineer. He's listed under "Plating Supplies" in your 'phone book.



...a BIG DIFFERENCE in Cold Drawn Bars

Contrary to popular belief, all cold drawn bar steel is not alike. There is one big difference worthy of your specification—the Bliss & Laughlin difference.

Only B&L Lusterized® cold finished bars are different from all others. B&L bar steel is cleaner, brighter, easier to handle. The exclusive B&L cold finishing process (patent applied for) removes drawing oils, lime and processing grit, producing a smooth, gleaming bright surface without processing contaminants to slow your production. And B&L special protec-

tive oil keeps dirt, dust and other airborne contaminants from the Lusterized surface until you are ready to process the bars.

This big difference over other cold finished bar steel is another benefit developed from B&L research since 1891 to produce better cold finished bars.

You can see the difference. You can work the difference advantageously. Since you pay nothing extra for B&L Lusterized bars, it is always rewarding for you to specify "Bliss & Laughlin Lusterized."

Originators of LUSTERIZED® Finish - The BIG DIFFERENCE in Cold Drawn Bar Steel

BLISS & LAUGHLIN

GENERAL OFFICES: Harvey, III. . PLANTS: Harvey, Detroit, Buffalo, Mansfield, Mass.

Specialists in Finish, Accuracy, Straightness, Strength and Machinability

NATIONAL ACME'S "ZONE OF RESPONSIBILITY"

INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS . . . Then Check National Acme

Direct Cests: these include direct dollar savings as realized by the McCulloch Corporation...an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

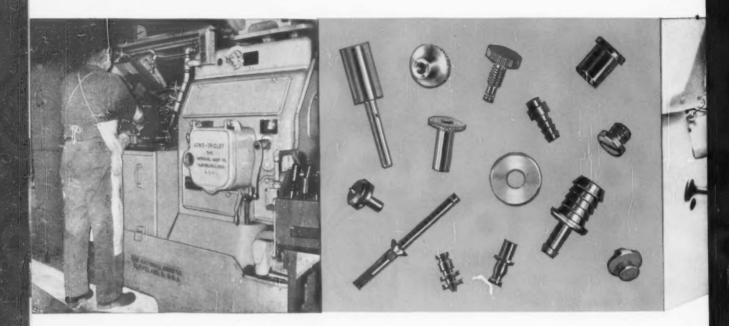
Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers

provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "onthe-spot" savings.



McCULLOCH CORPORATION LOGS 66% COST REDUCTION

... with Acme-Gridleys



Reduced cost-per-piece of tilt-lock knobs was but one of the enviable savings made possible for the Marine Products Division of the McCulloch Corporation by an Acme-Gridley RA-6 Spindle Automatic. In addition, McCulloch boosted output 200%, practically eliminated scrap losses, and greatly improved finish and final appearance of this small but critical part.

Previous production methods required one primary and two secondary operations. Now, complete machining—including deburring, is done in one automatic operation on the Acme-Gridley.

Dramatic savings in the production of parts like this make Acme-Gridleys a vital, cost-saving cog in McCulloch's highly efficient production set-up. Evidence of this leading manufacturer's high regard for Acme-Gridley efficiency is the fact that 14 different parts for their popular 60HP "Flying Scott" are produced on the rugged, versatile RA-6 Automatic.

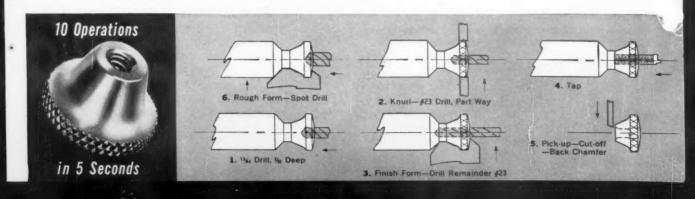
It will pay you to thoroughly study the savings possible with Acme-Gridleys. Call, write or wire for complete details on industry's most modern approach to tangible cost reduction.



National Acmo The National Acmo Company

The National Acme Company 175 E 131st Stree Cleveland 8. Ohio

Sales Offices: Newark 2, N.J.; Chicago 6, III.; Detroit 27, Mich.



How much money could this new press development save your stamping department? BUSS

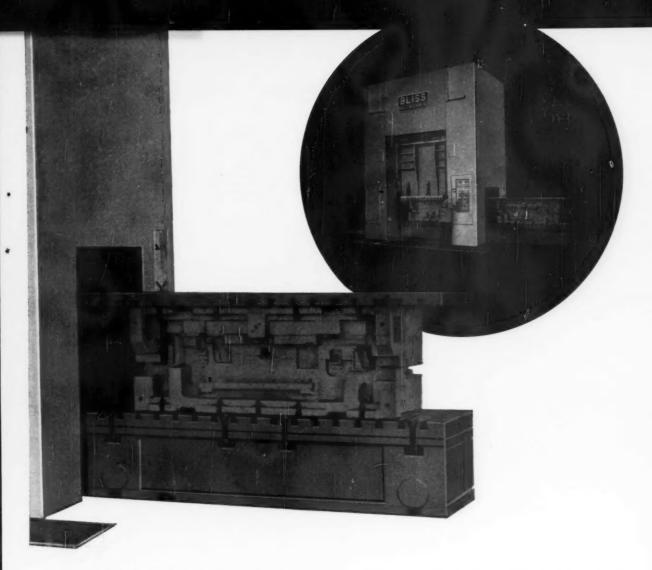
BLISS ROLLING BOLSTER PRESS CUTS DIE CHANGES TO MINUTES!

Get the most from each man hour...
electrical and pneumatic controls
adapt the rolling bolster to either
long- or short-run operations.



BLISS is more than a name...it's a guarantee

E. W. BLISS COMPANY, Canton, Ohio



Hailed as the longest step forward in large press design in the last twenty years, the new Bliss rolling bolster press outproduces an equivalent straight side press by a ratio of 1%-to-1. It raises press efficiency—the percent of the time the press is actually producing stampings—from an average of 40% to better than 90% of every working hour. More than twenty are already on order!

The new Bliss rolling bolster presses are far more than straight sides with something added. They have been redesigned throughout for highspeed operation. Some of their special features:

Automatic die clamps ...driven by a push-button controlled torque motor. Six threaded T-bolts clamp or unclamp the dies in seconds. Electric interlocks protect the dies and press from damage.

Automatic ram positioner ... positions ram electronically to any desired shutheight within .0015". It's fast and simple... you set the dials and push the button.

Hydraulic overload protection ... guards against die damage. Press overload releases oil in unique system under pressure equal to a preset capacity. Press stops, warning lights flash.

Simplified gear train...has only four gears, fewer than any other underdrive press. This extremely low inertial load permits a very high tripping rate with minimum clutch wear.

Demountable gear case ... comes off as a single unit, exposing all drive gears, clutch, brake and flywheel. Cuts hours from maintenance.

Link type press drive ... develops extremely high mechanical advantage through links, rock shafts and pulldown rods. Rock shafts rock to within 5° of vertical alignment, eliminating press sticking at bottom dead center.

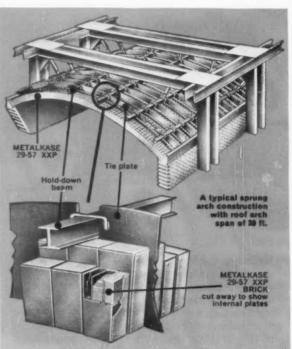
These overall design advantages and special features may save you money on many of the parts you are now producing on conventional presses. In total, they make up the most advanced and productive straight side presses ever developed... just one more result of Bliss' constant effort to design equipment to cut production costs to the bone. For detailed information, write us today.

Steel-making HARBISON- BASIC WALKER BASIC

Deviation from the conventional with Harbison-Walker specialized basic refractories is necessary to lead the way to reality in the commercial accomplishment of the All-Inclusive, All-Basic open hearth steel furnace. These products most economically withstand the ever-increasing severity of operating conditions including higher temperatures and larger furnaces with greater rates of production, accompanied by the use of oxygen with its important benefits.



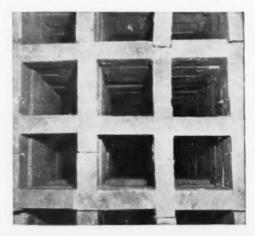
METALKASE 29-57 XXP internally plated metal-encased brick, used in both sprung and suspended arch constructions of all designs, continues making service records at many steel plants. The high purity magnesia, produced by Harbison-Walker from Michigan brines and stabilized as dense periclase, is a major constituent which measurably enhances the desirable properties of this refractory.



FORSTERITE L CHECKERS

Forsterite L is best among basic refractories for checker settings of open hearth regenerators. Properties of particular merit for this application are: resistance to fluxing, volume stability and strength at high temperatures, and relatively great heat capacity.





achievements with REFRACTORIES

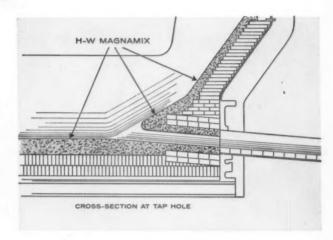
Widely-used basic refractories which are important contributors to the success of the all-basic furnace are briefly enumerated:

METALKASE, the original chemicallybonded magnesite chrome brick, steel-encased on four sides, gives superior service in front walls.

CHROMEX B is a chrome-magnesite brick having excellent volume stability and great high-temperature strength resulting from extremely hard firing. It is used with special benefit for front walls, back walls and suspended sections of the port ends.

H-W C-MIX (high purity seawater periclase) used for contour-rammed open hearth and electric furnace bottoms, greatly reduces furnace downtime, saves labor and avoids burning-in sacrifice of refractory superstructure.

H-W PERIKLASE is an exceedingly hardfired high-magnesia brick consisting predominantly of the mineral periclase in the most stable crystalline form. It is unusually resistant to hydration and is particularly adapted for open hearth sub-bottoms.



H-W MAGNAMIX, a pioneer among high-magnesia ramming mixtures, is used for monolithic bottoms. It is especially suited for both hot and cold maintenance and for repiping tap holes.

IN BASIC OXYGEN FURNACES, HARBISON-WALKER unique basic refractories set production records

H-W 17-56 is the special tar bonded basic brick which forms the complete working linings of these oxygen vessels.

H-W AMC magnesite brick laid with strong-setting H-W PERIKLASE BONDING MORTAR forms the protective lining against the shell.

H-W OXIMIX is the basic ramming mix which forms

both the monolithic hearth of the furnace and the intermediate monolith between the H-W 17-56 working lining and the H-W AMC magnesité brick.

The wide preference for these refractories is attributable to their high tonnage records, which continue to increase, with resultant reduced costs per ton of steel.



HARBISON-WALKER REFRACTORIES COMPANY

AND SUBSIDIARIES

GENERAL OFFICES: PITTSBURGH 22, PENNA.

World's Most Complete Refractories Service

more and more, Olin Aluminum gleams on America's prestige cars

Grilles and trim that proclaim the elegance and enhance the sweeping lines of America's fine cars—these reflect Detroit's growing reliance on Olin Aluminum. High-precision extrusions...alloys and finishes of impeccable quality and uniformity...shipping schedules synchronized with assembly-line requirements—these are Olin Aluminum's contribution to 1960's prestige cars. Expect no less when you order from Olin Aluminum. Whether you make cars or casseroles, trailers or tumblers, boats or blinds—your orders get V.I.P. attention. Always.

See Edward R. Murrow on "Small World" - every Sunday evening CBS-TV

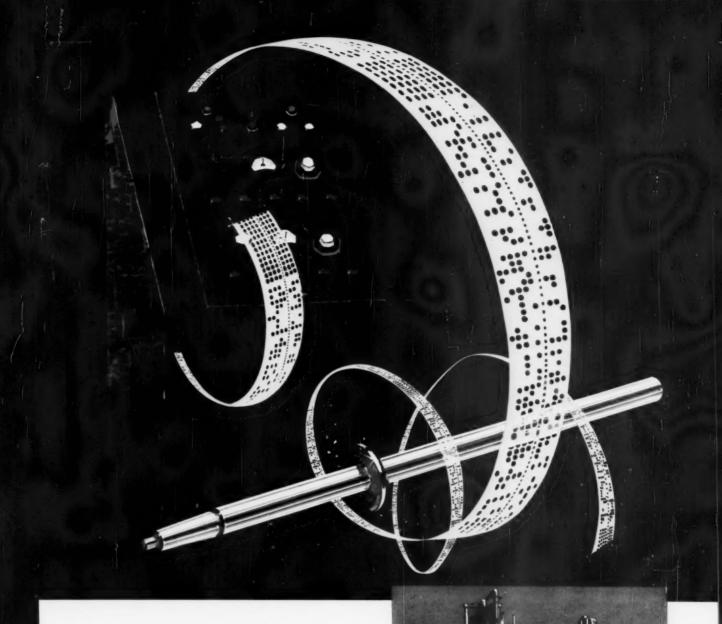
RLIN

CRILLE FOR THE EXCITING NEW DODGE FABRICATED BY RYERSON-HAYNES, WORKING WITH OLIN ALUMINUM EXTRUSIONS.



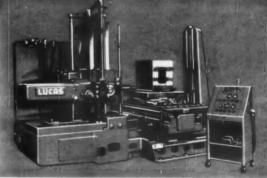


OLIN MATHIESON - METALS DIVISION - 400 PARK AVENUE, NEW YORK 22, N. Y.



Tape control... certainly!

Tape control can readily be applied to any Lucas model, (2 3/4" to 6" diameter spindles) if repetitive operations or complicated one-of-a-kind jobs make this new development advantageous. Lucas tape controlled machines are available with punched tape for N.P.C., magnetic tape for contouring, or tape and tracer control. If you have a profitable use for any type or size of horizontal boring, drilling and milling machine (up to 6" spindle capacity) you can get it at its best from the specialist in this type of machine. Did you ever meet a man who regretted picking a Lucas?

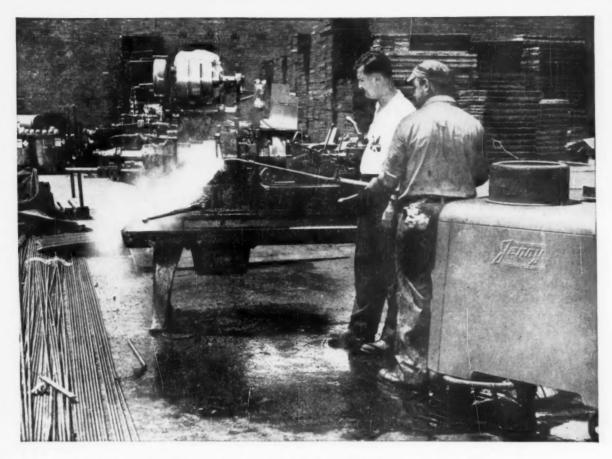


LUCAS OF CLEVELAND



type of control you want-pendant, lever, tape, tracer or any of these in combination -Lucas has it.

OF CLEVELAND



Jenny® Removes 25 Years of Grime-Slashes Tool Reconditioning Time!

To remove 25 years' accumulation of dirt, grime, and grease from 200 metal working and forming tools, was the problem faced by Mr. John Radzak, Production Manager, Universal Form Clamp Co., Chicago. After trying numerous methods, Hypressure Jenny Steam Cleaner was chosen as the most thorough and economical means of doing the job.

Typical of Jenny's speed and savings was the fact that it cleaned a 100-ton punch press in six hours, as compared with 10 man-days required previously by hand-cleaning methods.

Now, Jenny is used in the company's plant housekeeping program, and it has helped to establish them as one of the cleanest and safest plants in the country. worker morale to make Jenny the keystone of your maintenance and reconditioning programs. With a choice from more than 50 different models of Jenny, including all-electric, oil-fired, or gasfired types, and ranging in capacity from 35 to 360 gallons per hour, you are sure to get the best Jenny for your cleaning jobs.

It will pay you well in profits, production and

Mail the coupon today for additional facts or free demonstration. You'll be glad you did!

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Please	arrange	to	demonstrate	a	Jenny.
Send a	additiona	l is	nformation.		

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HOMESTEAD VALVE MANUFACTURING COMPANY

Hypressure Jenny Division—Coraopolis, Pa. (In Canada: Hypressure Jenny Sales & Service, Ltd., 517 Jarvis Street, Toronto 5, Ont. C.S.A. Approved) CF&I WIRE...

PACKAGED for PRODUCTION YOUR PRODUCTION



Reels (500-800 lbs. capacity)



Disposable Spools (5-70 lbs. capacity)



Reel-Less Core (800-1000 lbs.capacity)



Fibre Drum (250-600 lbs. capacity)



Standard Coils, paper-wrapped, steel-strapped or wire-tied.



This giant steelman – Image of CF&I – stands for the wire that will make more money for you on your production line. In instance after instance, all across the country, manufacturers have reported cutting hours off daily downtime . . . easing storage and handling problems . . increasing production as much as 50% . . . after they started using CF&I Steel Wire – Packaged For Production.

Such a record is possible because all CF&I Wire is specifically packaged to give one, or several, special production benefits. For extra hours of uninterrupted production, CF&I has jumbo-sized reels, coils and spools. New STEM-PAKS* and returnable Spiders are especially useful for continuous operations. The smaller Standard Coils and Disposable Spools are easy to handle and store, quick to put in operation. Fibre Drums and paper-wrapped coils are available when wire cleanliness is critical.

CF&I, pioneer in wire packaging, makes wire in a wide range of gages and finishes. Whatever your needs, CF&I can fill them. Call your nearest sales office for full details on the wire that's Packaged For Your Production.

CF&I-WICKWIRE WIRE



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Steel-strapped Wooden Racks



Shaped Coils (1500-2500 lbs. capacity)



Stem-paks (500-1000 lbs. capacity)

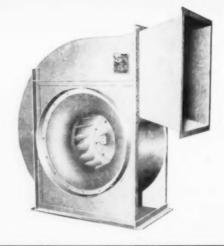


Returnable Spiders (2000-3000 lbs. capacity)

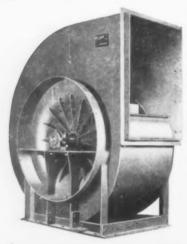


Steel-strapped Coils (200-2000 lbs. capacity)

Realize the Lower Cost of Lower Cost of Quality Fans



"Buffalo" Type "CR" Fan



"Buffalo" Type "BL" Fan



"Buffalo" Industrial Exhauster

Without a doubt — the dependable performance of quality built fans pays off in longer, more effective, trouble-free service. At Buffalo, we call this the "Q" factor... the highest quality you can get. Here are 3 examples of what this can mean to you...

For supplying moderate pressure ventilating, air conditioning and air cleaning systems, the "Buffalo" Type "BL" Fan is ideal. From inlet through wheel to housing, the "BL" is engineered for quiet, efficient, economical operation. The "Buffalo" designed non-overloading characteristic assures stable output from free delivery to shutoff. Buffalo's traditional durable construction assures long, maintenance-free life. Capacities to 500,000 cfm. Write for Bulletin F-104.

For severe industrial service the "Buffalo" Type "CR" Fan is unsurpassed. Fan efficiency is increased by the same design factors that reduce wear to a minimum. A unique radial blade plus maximum streamlining through the entire fan accomplishes this dual purpose. Long, productive fan life is assured by Buffalo's extra-heavy duty construction throughout. For full details, write for Bulletin FD-205.

For rugged air and material moving jobs you can rely on "Buffalo" Industrial Exhausters. Special units will move hot gases from 200° F. to 850° F. For handling corrosive fumes, actual users prove that "Buffalo" Rubber-Lined Exhausters will outlast standard metal fans as much as twelve to one. Efficient material wheels are available for moving emery dust, saw dust, chips, long shavings and many other materials. There's a "Buffalo" Industrial Exhauster to fit your "tough" application. Write for Bulletin F1-110.

For full information on these and every type "Buffalo" Fan, call in your nearest "Buffalo" Representative. Or write us direct, outlining your air moving problems.



BUFFALO FORGE COMPANY

Buffalo, N. Y.

Buffalo Pumps Division Buffalo, N. Y. Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

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For 65 years, Hyde Park Foundry and Machine Company has been developing, designing and manufacturing rolls, rolling mills and auxiliary equipment for steel mills, everywhere.

The "Red Circle" is your guarantee of quality. You will find it on every roll. It is symbolic of the highest integrity and efficient performance of all Hyde Park rolling mill equipment.

Hyde Park Engineers are always ready to co-operate with you in selecting and applying the rolls and equipment best suited to your operation.

Our Foundry and Machine Shop facilities are equal to any of your requirements.



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Nickel Alloy Grain Rolls Grain Rolls Chilled Rolls Nickel Chilled Rolls Moly Rolls Nodular Iron Rolls

All Grades Nickel Alloy Iron Rolls for Hot and Cold Rolling

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CASTINGS

Furnace Castings Heavy Die Castings Bases Housings Machinery Castings Slag Pots Heavy Tool Castings Floor Plates







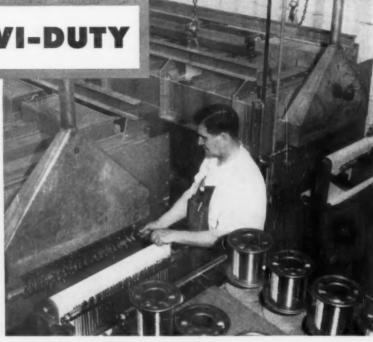


FOUNDRY and MACHINE CO.

HYDE PARK, WESTMORELAND COUNTY, PITTSBURGH DISTRICT, PA.

...Appleton Wire Works Corp. did

... and now bright anneals 4 miles of wire every minute at 1500° F. with



Two Hevi-Duty strand annealing furnaces, each with 40 alloy tubes and three zones of temperature control, produce up to 22,000 ft. of quality brass and bronze wire per minute at temperatures to 1500° F. at the Appleton Wire Works Corp., Appleton, Wis. Each electric annealing furnace is used 24 hours per day and five days a week.

2 HEVI-DUTY ELECTRIC FURNACES

At the Appleton Wire Works Corp., Appleton, Wisconsin, two Hevi-Duty electric strand annealing furnaces bright anneal up to 22,000 ft. of brass and bronze wire per minute at temperatures to 1500° F. The wire is used in the weaving of wire cloth for the paper and pulp industry.

Designed for maximum operating temperatures of 2000° F., each Hevi-Duty furnace has 40 alloy tubes through which the wires pass, and three zones of temperature control. Wire is annealed under a dissociated ammonia atmosphere.

These Hevi-Duty furnaces are in operation 120 hours per week, and this company reports significantly low operating costs. Temperature uniformity of ±5° F. along the heated length of all tubes has extended tube life by eliminating hot and cold spots.

Like Appleton Wire Works Corp., you too, can boost production, realize lower operating costs, and obtain temperature uniformity and rapid, easy temperature control with Hevi-Duty furnaces.

On any heat processing problem, contact Hevi-Duty. Call or write today.



ASK HEVI-DUTY

for more information on electric or fuel fired heat treating furnaces. Write for Bulletin 653A for full details.



BASIC PRODUCTS CORPORATION

HEVI-DUTY ELECTRIC COMPANY, MILWAUKEE 1, WISCONSIN Industrial Furnaces and Ovens, Electric and Fuel . Laboratory Furnaces . Dry Type Transformers . Constant Current Regulators

For speed and mileage...



Resinall means that the sharp-cutting aluminum oxide abrasive is resin-bonded to take punishing friction-heat. "Resinall" METALITE belts are breaking production records in a wide range of metalworking operations - from roughing, to fine polishing. Available in a variety of belts,

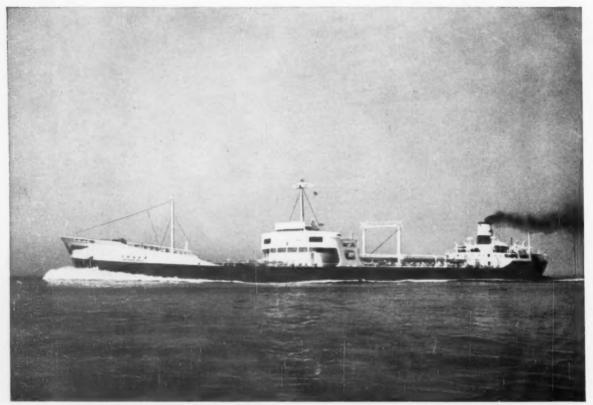
flap wheels, discs, cones, and other specialties.

A DIVISION OF NORTON COMPANY

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Tankers built by NKK with NKK's steel carry oil produced with NKK's pipes

NIPPON KOKAN's capacity to produce from iron ore an astonishing variety of high-quality products assures customers that the most exacting requirements will be promptly and faithfully met.

Principal Products:

Tubular Goods—Bars & Shapes—Plates & Sheets—G. I. Sheets—Pig Iron Ferro-Alloys—Coal Chemicals—Fertilizers—Refractories—SHIPBUILD-ING—SHIP REPAIRS—INDUSTRIAL ENGINEERING



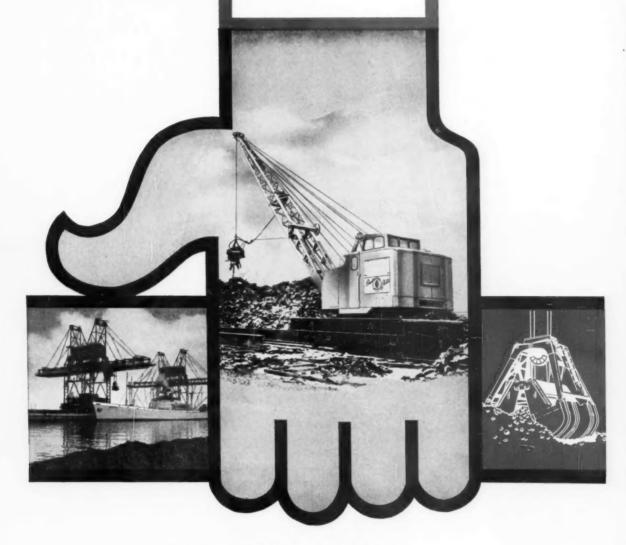
NIPPON KOKAN K.K.

(Japan Steel & Tube Corporation)

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for efficiently handling heavy bulk material at minimum per ton cost



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write for catalog 562

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the measure of Performance Reliability for more than a century 200-ton Hydraulic Bulldozer for Massey-Harris-Ferguson, Ltd. The proven work horse for bending, forming and forging -WILLIAMS-WHITE BULLDOZERS Williams-White, originator of the bulldozer, makes them a little bit stronger, a little bit more versatile, and more accurately and easily controlled. Full range of 50 to 500 ton standard self-contained hydraulic models, or individually engineered and built to meet your special requirements. Request Bulletin No. 73 for data and specifications. WILLIAMS-WHITE & CO . MOLINE, ILLINOIS











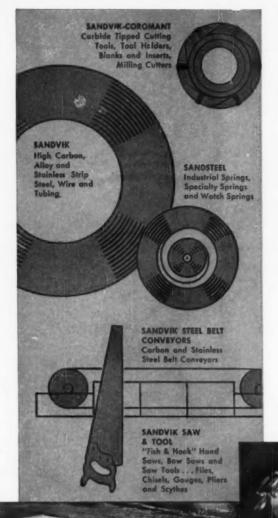


PUNCHE

When you buy a machine you buy creative engineering skills and craftsmanship. Among your chief considerations should be the record and integrity of the maker.

HAMMERS

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In razor blades and refrigerators, in clocks and cars, in hand saws and industrial tools, in chemicals and candy...almost anywhere you look, Americans use Sandvik products.

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We can guarantee sheets that are perfectly flat, straight, parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

89 years of experience. Large enough for big jobs, small enough for personal attention.

CHARLES



METALS

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PERFORATING SPECIALISTS OF ALL TYPES OF MATERIALS

Add production flexibility the low-cost way with EX-CELL-O UNIVERSAL FIXTURES

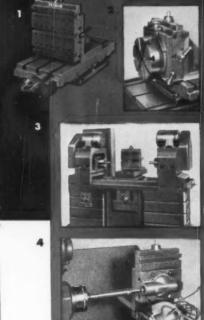


- Faster parts changeover
- Easier work setups
- More work from your present machines

LEFT

Hydraulically-operated cross slide of Universal Fixture supports angle plate fixture for production boring and facing. RELOW

1 Manually-operated unit equipped with vertical slide. 2 Rotary Index Table mounts on Universal Fixture, has vernier scale for precise angular settings. 3 Installed on Style 17-A Precision Boring Machine, Hydraulic Universal Fixture increases versatility at low cost. 4 Adaptable to many operations, this Universal Fixture permits fest setup for line-boring and finish-facing work.



There's no end to the variety of boring, turning and facing jobs your Ex-Cell-O Precision Boring Machines can do when fitted with Universal Fixtures!

Designed for both short-run work and volume production, Ex-Cell-O Universal Fixtures come to you ready to mount on the machine table. Base, bracket and slides are normalized nickel-iron castings, with precision-machined T-slots and tapped holes for quick setup and accurate alignment of spindle to fixture. Work, fixtures or tools can be mounted at any position on the vertical or horizontal slide; inbuilt micrometer adjustment assures accurate setups.

Available for either manual or hydraulic operation, Universal Fixtures fit small and large Ex-Cell-O Precision Boring Machines, single or double-end models. Write today for details, or contact your Ex-Cell-O Representative.



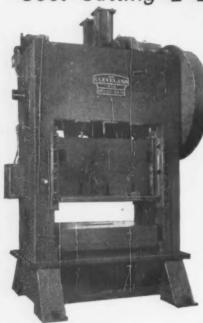
Machinery Division

EX-CELL-O PRECISION PRODUCTS INCLUDE: MACHINE TOOLS - GRINDING AND BORING SPINDLES - CUTTING TOOLS - RAILROAD PINS AND BUSHINGS - DRILL JIG BUSHINGS - DRILL JIG BUSHINGS - TORQUE ACTUATORS - THREAD AND GROOVE GAGES - GRANITE SUFFACE PLATES - AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS - DAIRT EQUIPMENT

For Greater Economy In Metalworking

CLEVELAND

Cost-Cutting PRESSES

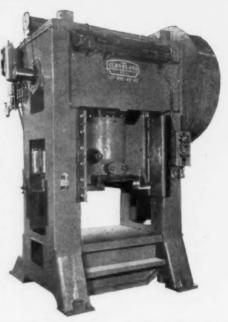


Cleveland high-speed Double Eccentric Press, 200-ton capacity, operates at 50 to 150 strokes per minute for high-speed punching, shearing, perforating, bending and forming.

Are production breakdowns, slow outmoded presses and mounting maintenance costs destroying your profits? A check of your press performance records may show you're already paying for new presses . . . without their benefits.

For lower operating costs, quicker starting, increased production, investigate the new minimummaintenance Cleveland Presses. Our engineers are ready to help you plan a program of replacing old inefficient presses with modern cost-cutting Cleveland Presses of the exact type, size and capacity to meet your need.

You get better stampings for less with a Cleveland Press.

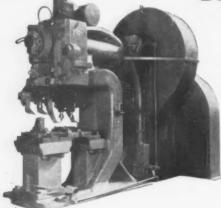


Cleveland's cost-cutting Single Eccentric Press, 350-ton capacity, operates at 60 strokes per minute, has air-counterbalanced slide and auxiliary air brake on flywheel.

FABRICATING TOOLS For Plate and Structural Steel

Ruggedly built for profitable production and simplicity of operation, Cleveland Fabricating Tools are designed for trouble-free operation and years of service—a fact proven by leading ship-yards, bridge builders, railroads, structural shops and boiler makers since 1880.

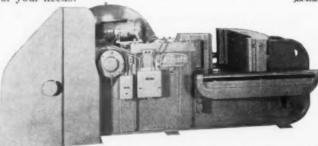
For punching, coping, notching, shearing, bending and planing I-beams, steel plate, bars, angles and other structural shapes, you can do it better, more economically with Cleveland Fabricating Tools. Write for Catalog #9 to help you determine the correct tool for your needs.



Cleveland I G Beam Punching Machine equipped with 3 gaged punching attachments, one high and two low die holders, 24" throat, completely enclosed gears and flywheel, punching capacity: standard 6" to 24" I-beams in flange and web. Other capacities and sizes available.



E. 40th and St. Clair Avenue, Cleveland 14, Ohio



Cleveland No. 2 Bending & Straightening Machine, welded steel frame, completely enclosed gears and flywheel, arranged for direct-drive motor and equipped with power adjustment to plunger through separate motor. Capacity: bend or straighten 24" I-beams vertically or horizontally.



Photo courtesy of Jones & Laughlin Steel Corporation

BAKER'S MAGDOLITE AND JEBCOLITE are always 5 ways better

Continued research and development throughout the years, plus The J. E. Baker Company's precisely controlled manufacturing methods, have resulted in the superior, properly burned, grain-sized Magdolite and Jebcolite particles which help provide:

More uniform ingots—increased ingot production—increased furnace efficiency—lower

refractory costs—less defective production material.

Magdolite and Jebcolite* are the original dead-burned dolomites that offer better composition, preparation, strength, economy and quality. Don't say "dolomite." Save dollars. Specify Baker's Magdolite for open hearth and Jebcolite for electric furnace use.

* Jebcolite has the same superior chemical, physical and mineralogical characteristics as Magdolite and differs only in grain size which is designed specifically for electric furnace application.



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Brown-Lipe-Chapin eliminates manual handling with mechanical ejection of hot die castings.

Here's a typical example of how Brown-Lipe-Chapin engineers put quality into your die cast parts.

After the die casting cycle, castings are ejected automatically into a quench, where a conveyor takes them to the trim press. This modern method of die casting allows a maximum operating rate and boosts the over-all production rate by 50%. Also, casting uniformity is assured because the cycle time is constant and unaffected by operator fatigue or other human factors.

This is just one of the many outstanding features of Brown-Lipe-Chapin die casting facilities that can help make your product better and to more rigid quality standards.

'Under the same roof are facilities for metal stamping, anodizing, electroplating, buffing and polishing, precision painting, plus complete engineering service. And two Brown-Lipe-Chapin plants, strategically located in Elyria, Ohio and Syracuse, New York, offer the same complete facilities. For further information, call or write Brown-Lipe-Chapin, Syracuse, New York.





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DIVISION OF GENERAL MOTORS CORPORATION

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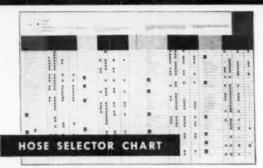


Chart shows you how to select the right hose lines to meet your precise needs!

Here is finger-tip-convenient information for purchasing agents and maintenance engineers working with fluid-carrying lines. This brand-new catalog presents clear, complete information on easy-to-assemble Aeroquip Hose Lines and Reusable Fittings.

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For your ADVANCE copy of this new catalog, fill in coupon-mail TODAY!



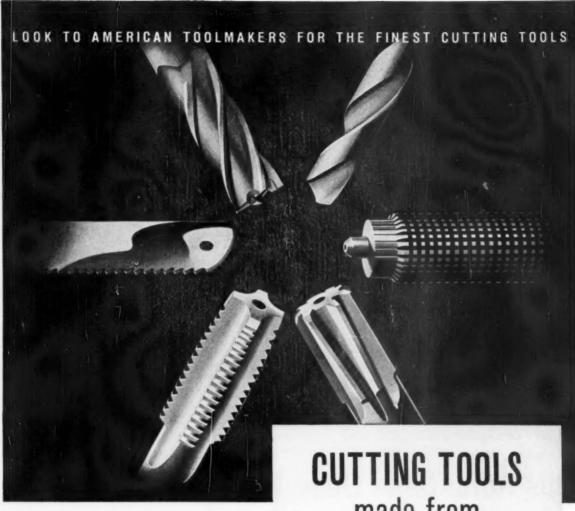
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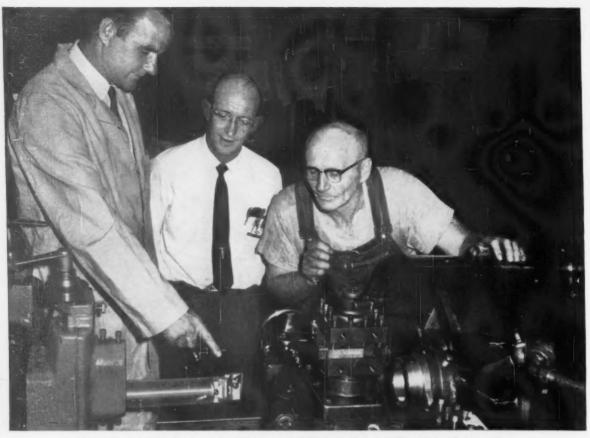
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TOOL STEELS . STAINLESS STEELS . HIGH TEMPERATURE METALS



Kennametal Carbide Engineer, Tool Engineer and Machine Operator. This 3-Man Tooling Team found the answer to better boring operations at Gardner-Denver Company.

This Adjustable Head KENNAMETAL K-Bar does the work of 5 "special" bars

Three bores on this 8620 steel casting chuck end previously required five special boring bars. Chatter and inability to hold size was a constant problem. Then the Kennametal Carbide Engineer suggested that one Kennametal K-Bar be tried for all three bores.

Although the test setup was not ideal (11-inch bar overhang), the K-Bar conclusively outperformed the five bars previously used. Increased machining speeds possible with the K-Bar produced the outstanding time reduction shown in the table. Substantial savings will also accrue through reduced tool maintenance.

In the tests, depths of cuts were varied from .001 to .500 but chatter could not be detected. The high rigidity of Kennametal (three times that of the hardest steel) made it possible to eliminate weaving, chatter and provided a better finish. Ask

your Kennametal Representative, or write us direct about our line of adjustable K-Bars with Standard Kendex inserts and chip breakers, seven sizes, 1-inch to 21/2-inch diameters. KENNAMETAL INC., Latrobe, Pa.

Material: 8620 steel casting

3-bore operation:

4.470 bore - . 325 depth of cut 3.720 bore -- .290 depth of cut 3.220 bore -- .290 depth of cut

Actual machining time:

Original setup (5 special bars)

16.7 minutes

Kennametal K-Bar TIME SAVED PER PIECE 13.6 minutes

3.1 minutes



Kennametal K-Bars PREVENT chatter, taper, weaving and drag-out scoring. Kennametal K-Bars PERMIT successful use of harder grades of carbide inserts, faster machining speeds.

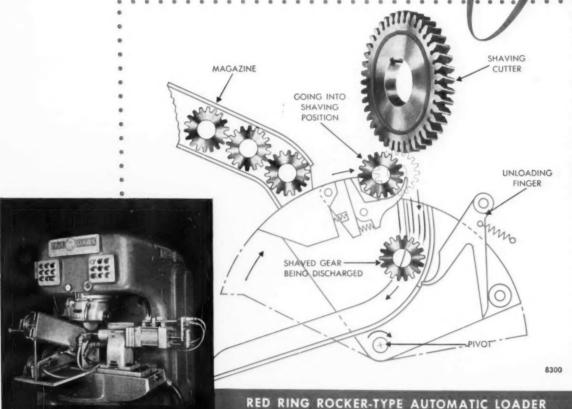


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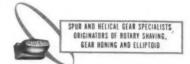
Production you can expect from automated gear shaving is determined by the type of automatic loader you use.

You get maximum production when the loader moves a gear from the magazine into shaving position and discharges its shaved predecessor - all at the same time. This assures maximum cutter operation.

If, on the other hand, the loading of a fresh gear has to wait until the previous gear has been discharged, shaving is delayed and you get only about 75% of the production you could otherwise expect.

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Machine may be automated for MAXIMUM PRODUC-TION — and without any major revisions in its design. Write for details.



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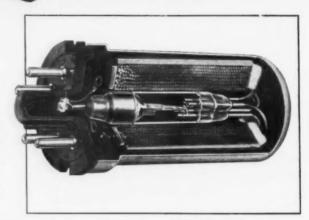
Tubular Products NEWS

"METALS FOR

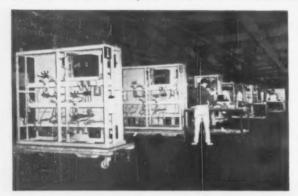
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Super pressure stainless steel tubing connects many components of the cubicles illustrated. Minneapolis-Honeywell's Missile Equipment Division, Pottstown, Penna. builds these control cubicles that make up the gas charging system for the Bomarc missile. BISHOP supplies Honeywell with two sizes of 304 seamless super pressure tubing for this application. During charging of the missile, tubing handles pressures up to 5,400 psi. If you use small diameter tubing—super pressure, commercial quality or other—consider BISHOP. Use the coupon for a copy of BISHOP'S Tubular Products Bulletin.



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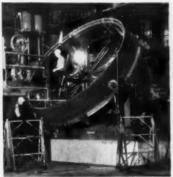
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The G3500 is built 100% complete at our factory and requires no additional assembly at customer's site. Portable too...can be easily transported by rail for field fabrication jobs.

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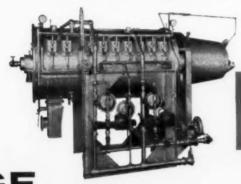


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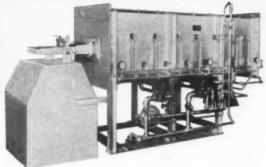
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Model 231

Medium size Stacker Hearth Furnace for the widest range of work, even fight and delicate stampings. Momentum Imperted to each work piece conveys R individually through the heat with me distortion or warners.



Capacities to 800 lbs. per hour. Processing pieces from .010" to 1" thickness and up to 10" in length. Automatic continuous feeding reduces direct labor costs drastically! Clean hardening, ammonia-gas case hardening, light case carburizing of steel parts, etc., are accomplished equally well WITHOUT ANY MODIFICATION OF THE FURNACE.

The muffles and retorts are, in reality, radiant tubes WITHIN which the work and atmosphere gas is contained. Zoned combustion systems uniformly heat these muffle tubes from the outside to the desired temperature in each work zone. Control is precise, results uniform.

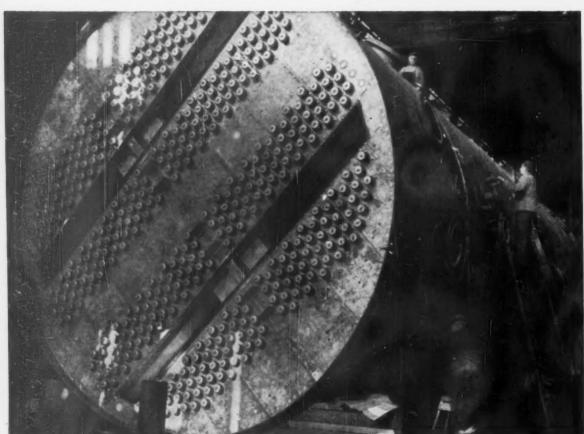


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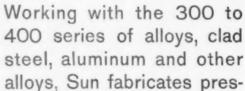


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by VAN HUFFEL FOR KOPPERS PRECIPITATORS

ACTUAL SIZE

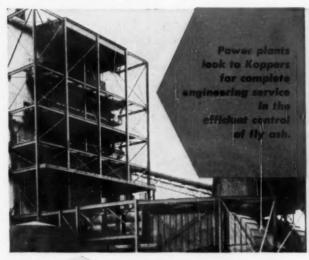
This V-Pocket Electrode section, produced for Koppers Electrostatic Precipitators, is another of the many ideas Van Huffel roller die, cold forms in various metals for a wide variety of applications.

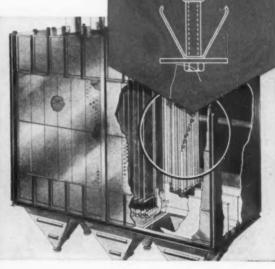
Whether you require a simple or complex shape—in hot or cold rolled steel, stainless steel, high strength steel, coated steel, aluminum, copper, painted or plated metals—for parts in such widely diverse fields as material handling, building construction, communications, transportation, farm implements, furniture and appliances—it's probable Van Huffel's experience, facilities and products can help you cut costs and make a better product. The handbook shown below tells you how.

Where ideas



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Brightness is Not Enough

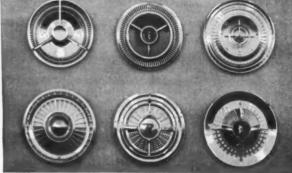
Wheel covers must be more than just bright. They must have strength, spring temper, durability and low unit cost in volume production.

Other materials may claim some of these characteristics, but only stainless steel actually possesses all of them - and has a performance record to prove it.

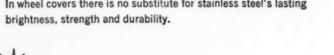
It is easy to make cheaper wheel covers. Just forget that customer complaints, lost goodwill and the inevitable replacement of parts eventually show up on the balance sheet.

In wheel covers there is no substitute for stainless steel's lasting

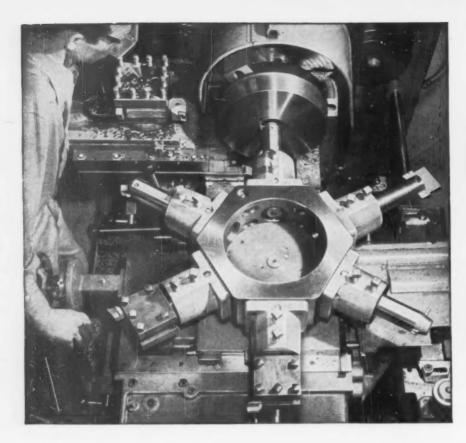
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Can you name the cars represented by these stainless steel wheel covers? A postcard request will bring you the answers.



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Expert setup gets more work per chucking

How manufacturer uses C/F turret lathe to produce variety of chuck bodies with only one tool change

To do the job, the manufacturer selected a Gisholt 1L Saddle Type Turret Lathe with a cross-feeding hexagon turret. A 15" 3-jaw air chuck holds down chucking time. One set of adjustable serrated jaw bases handles the different workpiece sizes for first machining operations. A quick-indexing square turret on the cross slide carries turning, facing and chamfering tools, which work simultaneously with tools on the hexagon turret.

Three stub boring bars on the hex turret bore, counterbore, recess and back face. Because size is set with the cross-feeding turret, these same boring bars are used on different part sizes. Also on the hexagon turret are 2 box-type tool posts for facing, boring or recessing—used for different size workpieces because of the cross-feeding feature. A threading attachment lets the manufacturer thread the hubs, and a taper attachment handles up to 8 inches taper per foot when required.

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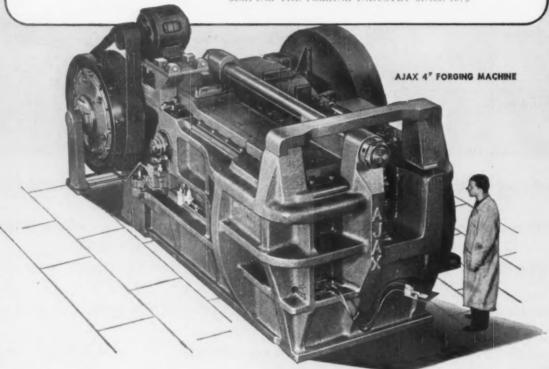
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New leaded 1020 tubing permits faster speeds and heavier feeds, often reduces the number of finishing operations

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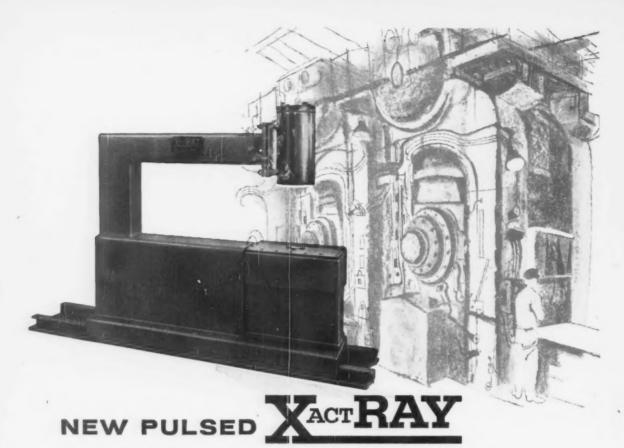


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XactRAY integrates readily with existing or XactRAY-MATIC controls for economical "closed loop" regulation

For full information, contact your local Daystrom-Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.

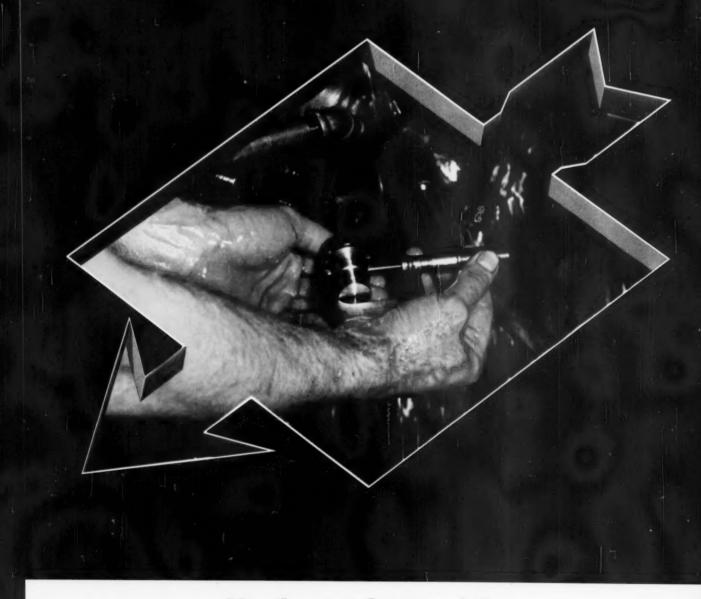


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LATHES

Lodge & Shipley POWERTURN Lathes combine accuracy and rugged strength with greater precision and operating convenience. Fast, foolproof Speed Dial headstock has just two dials for fast setting of speed changes. POWER-SHIFT RRESELECTOR Lathes are even faster; single dial for preselection of cutring speeds plus remote shift. Available in Engine, Toolmaker, Gap, 45° and 90° COPYMATIC (tracer controlled) Lathes in sizes from 1610 (13") to 3220-32 (25"/35" Raised). Lodge & Shipley also builds Hollow Spindle Lathes (with large hole through spindle) and 60" T Lathes.



The Lodge & Shipley 1307 HI-TURN (10") Lathe is completely new in size, design, utility and even in its low price. It provides high speed turning, boring and facing capacity where the use of a lead-screw is of no consequence. The HI-TURN Lathe is extremely rugged and has nine geared speeds with a high spindle speed of 3000 rpm and 5 hp, giving the ability to handle newer, tougher metals at production rates. Also available with 45" hydraulic tracer slide and completely automatic cycling.

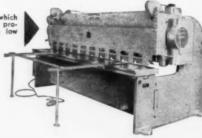


SHEARS

Featuring exclusive combination air clutch and brake which eliminates unnecessary gear wear, gives absolute overload protection, cushions shock. Many other features included in low base price. Capacities from 3/16" x 4" to 5%" x 8".

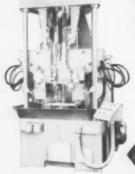


24" SPEED SHEAR ... designed for accurate duplication of straight side parts without the expense of dies and punch press equipment. Production-proved for straight and angle shearing, slitting, notching, blanking and similar operations at speeds of 120 strokes per minute. Capacity: 10 gauge x 24" mild steel.



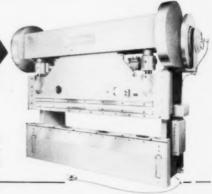
BRAKES

Rugged, powerful, heavy duty brakes with many features os standard. Specially-designed combination air clutch and brake installed in heavy, balanced flywheel requires no adjustment... known for trouble-free service. Available in capacities from 120 tons x 6' to 250 tons x 16'.



FLOTURN

Completely new metal forming equipment and process originated by Lodge & Shipley ... saves time, material and tooling cost. Makes spherical, conical and cylindrical shaper from simple blanks. Replaces many costly forging, drawing and machining operations. No. 12 Vertical Floturn illustrated; larger sizes and sub-contract service also available.



Detailed Literature on Request

THE Lodge & Shipley COMPANY

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METALOGICS

find out about this new science on the next three pages . . .

METALOGICS

RYERSON PLUS VALUES

...the Ryerson science of giving optimum value for every purchasing dollar

Metalogics at work . . . IN STEEL



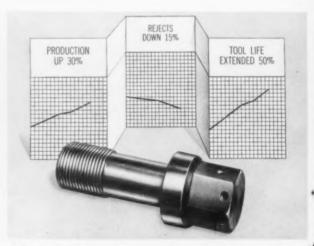
Both good steels—but only one was right for the job. Severe stresses imposed by this forming operation caused a high rate of reject for a fabricator using hot rolled plate to the usual ASTM-A7 spec. A Ryerson specialist suggested change to Ryerson welding and forming plate—a prompt solution to a costly problem.



Missile component problem solved. Titanium stringers in stainless forged bars were creating a high reject rate for a missile parts manufacturer. His Ryerson specialist recommended a switch from Type 321 stainless to Type 347. Result: the same stabilized corrosion-resistance and strength—but no titanium stringers.



The need was urgent. A breakdown was cutting output of a big paint producer, but steel to repair the break was not available locally. A call to the nearest Ryerson plant 200 miles away 1 sulted in delivery of 100' of bar stock at the airport an hour later. Three and one-half hours after calling Ryerson in another state, the customer had his steel.



Value analysis boosts production 30%. This was the outstanding result when a metalworking company studied and evaluated production of piston pin boltheads with a Ryerson representative. He recommended Rycut[®] 40—the world's fastest machining alloy steel in its carbon range. Other results: rejects reduced 15%...tool life increased 50%... better finish.

Metalogics at work . . . IN ALUMINUM



Furniture manufacturer saves 15¢ per unit on every chair produced. A rolled aluminum angle in 6061-T6 alloy was being used where strength was not an important factor. A Ryerson aluminum specialist suggested an extruded angle in 6063-T5 which gave all the strength needed in the application, was more easily formed, had better appearance—and reduced costs as well.



Better product appearance and a saving in material cost resulted when a Ryerson man recommended that a producer of portable coolers switch from one aluminum alloy (3003-H14) to another (5005-H14). Slightly higher structural strength was a bonus value. Unusually broad aluminum stocks and technical resources often enable Ryerson to serve in this way.

Also plus values in . . .

INDUSTRIAL PLASTICS



A leading chemical company was using a PVC pipe that included synthetic rubber for high-impact strength in producing 50% hydrochloric acid. But the acid ate away the rubber, leaving particles in the solution. The old pipe was replaced by Ryertex*-Omicron PVC, which contains nothing to contaminate the acid and has natural high-impact strength. Results thus far: 18 months of trouble-free service at 125° F. and maximum pressure of 40 psi.

METALWORKING MACHINERY



375-ton rolls to 7½-lb. punches... and everything in between. Whatever you need in metalworking machinery, call Ryerson. Over 3800 types and models available—everything from this huge bending roll to small hand punches. The Ryerson line includes machinery for bending, braking, drilling, forming, hoisting, pressing, punching, rolling, sawing, shearing, threading and welding. Ryerson also offers a complete, special line of material-handling equipment.



METALOGICS

...how it works for you

Broadens Scope of Selection

Know a single source where you can get aircraft-quality alloys such as 9310, Nitralloy, and 4340 to A.R.T.C.-14... as well as all standard commercial alloys and free-machining types? This is typical of the size and diversity of Ryerson stocks. Here, right at the tip of your dialing finger, are thousands of tons of steel and aluminum—in virtually every standard type, size and shape. Also, hard-to-get intermediate sizes and special analyses are readily available. This is true of Ryerson stocks, year in and year out—in all but periods of extended production shutdowns.

Brings Newest Developments

Remember when lead was first added to carbon steels for faster machining...when, a little later, leaded alloys came along? Ryerson stocked them for you first. And remember just recently when the world's fastest machining steel tubing and bars (Ledloy* 170 tubing and Ledloy 375 bars) were introduced? Again, Ryerson brought them to you first.

Gives New Measure of Quality

Quality—now there's a word that's worn thinner than an office-seeker's shoe sole. But Ryerson Metalogics has given it new meaning, with a brandnew set of rigid quality-control standards that are completely detailed and published for your scrutiny. They govern every aspect of specifications, verification, packaging, cutting and certification of all Ryerson products. If you want a tangible example of the scope of this new quality program, take a good look at Ryerson cutting tolerances. Then see if you can find any that are held more closely.

Provides Best Technical Help

"Expert" is another worn-out word we hesitate to use. But we do put at your disposal the industry's most experienced men. They're ready to give you the benefit of their nationwide, daily experience with all kinds of problems—material selection, fabrication and the ever-present specter "cost of possession." And remember, nowhere else will you find as wide a range of published technical information to help you in your metalworking operations. It's yours for the asking.

Builds Solid Business Relationship

Here's a company you should get to know better for our primary business is that of satisfying customers. And we've kept a lot of people satisfied over the last 100 years. We'd like to satisfy you, too.

Meets Most Exacting Schedules

What do you need right now . . . tomorrow . . . or in the future? Whatever you need, Ryerson is there —"the fastest with the mostest"—exactly when you need it—as you need it.

Why not discuss the exciting story of Metalogics with your Ryerson representative soon. You'll find he can help you in more ways than you might think—to meet all your requirements for steel, aluminum, plastics and metalworking machinery.

Be "METALOGICAL"—call Ryerson





STEEL · ALUMINUM · PLASTICS · METALWORKING MACHINERY

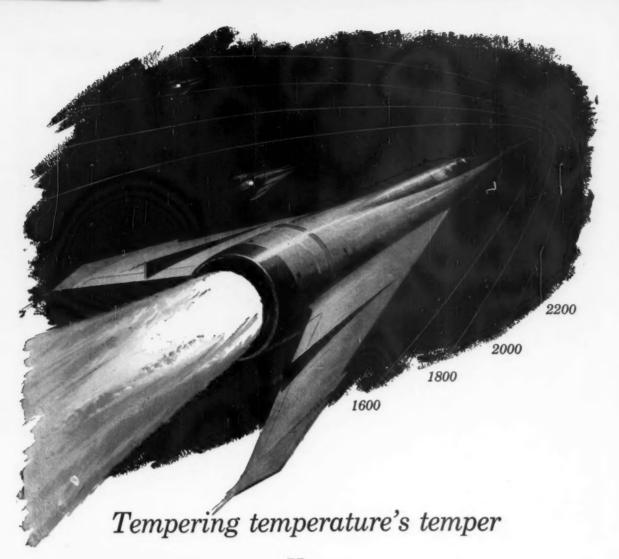
RYERSON STEEL

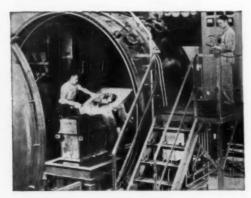
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8

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HAYNES

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Larger work sizes for more efficiency...for short run punching — 30'' x any length ... for production run hole duplication — 25'' x 30''.

Adjustable table for greater accuracy and flexibility...for punching to closer tolerances in angles, shapes and formed parts as well as flat sheets.

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Wide range of hole punching capacities...from a $3\frac{1}{2}$ " hole (round or shaped) in 16 gauge to a $\frac{1}{2}$ " hole in $\frac{1}{4}$ " mild steel.

Corner and edge notching...up to $5''\ x\ 5''$ in 16 gauge mild steel — 90'' corners, rectangular, vee, radii and special shape edge notches.

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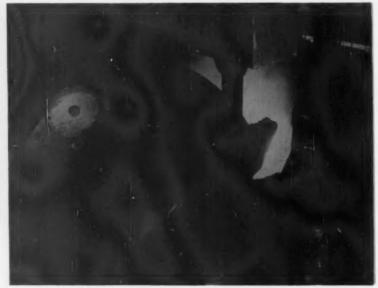
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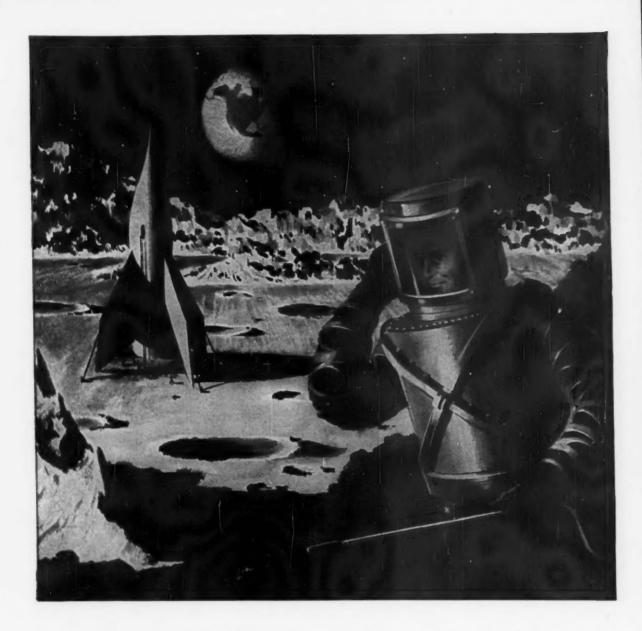
Kaiser Steel Corp., Fontana, Calif.



McLouth Steel Corp., Trenton, Mich.



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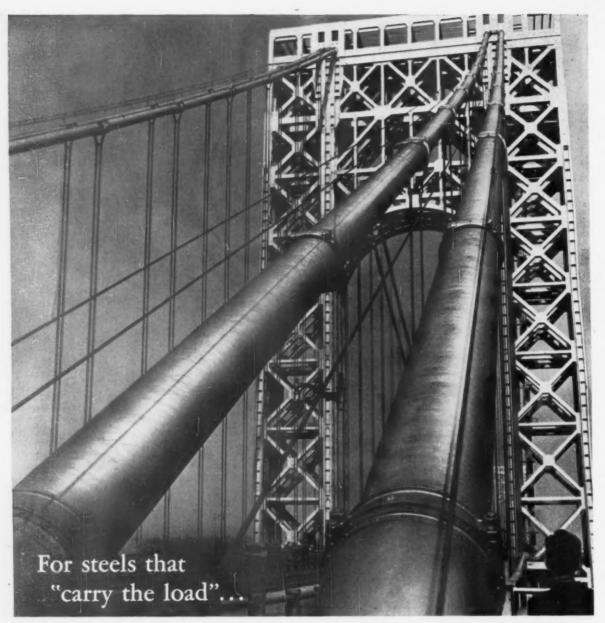
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Vertical or horizontal base mounted — for any floor, wall, or ceiling mounting position — choice of many shaft positions in either base — single or double reduction helical gearing — for ½ to 10 hp drives. Sold also without motor, ready for attachment of separately purchased motor of your choice.

Order from your nearby Distributor and get any arrangement you specify — ready to install



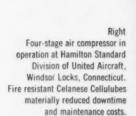


VERTICAL BASE MOUNTED OPTIMOUNT RATIOMOTOR drives agitator blade shaft on pigment mixers in coated textiles plant. Manufacturer says: "OPTIMOUNT adaptability permitted simplified, efficient design for our specific needs . . . at a much lower cost for the complete installation."

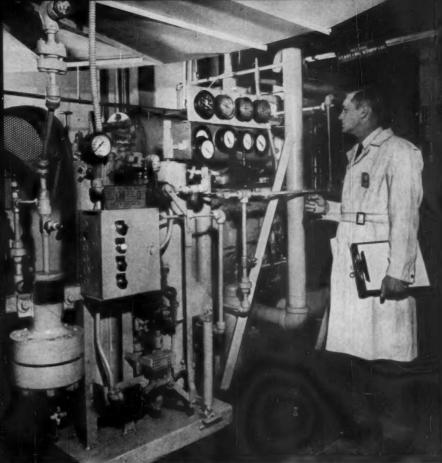


- STANDARDIZATION PAYS -S





Below Mr. Robert Fredrickson, Foreman, checks compressor operation.



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At Hamilton Standard, lubrication of a 4200 psi four-stage compressor was a serious problem. Carbon deposits from petroleum lubricants made it necessary to lease a stand-by compressor, and a mechanic was assigned to round-the-clock duty to prevent valve malfunction and spring breakage. Even so, repair bills and maintenance costs ran into large sums of money, and valuable production time was lost. After switching to Cellulube 220, only routine maintenance was required. The formation of petroleum carbon residues ceased, and oil fouling of the compressed air dryer was eliminated. The former constant threat of fire and explosion was also eliminated. Cellulubes made it possible to ship back the stand-by compressor and turn over servicing of the machine to its regular department.

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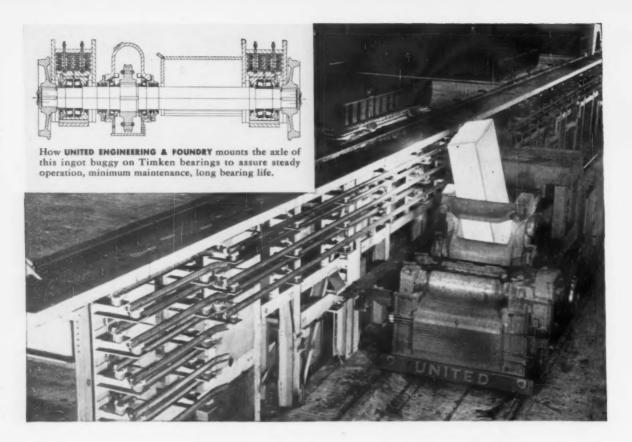


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THIS United ingot buggy moves hot slabs and keeps 'em moving fast from a major steel producer's slab mill. To make sure the buggy moves the heavy loads steadily, with minimum maintenance, its builders, United Engineering & Foundry, equipped it with 27 Timken® tapered roller bearings. They're used on the axle drive worm shaft, axle journals, worm gear tilting drive worm shaft and tilting drive pinion shaft.

Timken bearings keep shafts aligned, gears meshing accurately.

The tapered design of Timken bearings enables them to take any combination of radial and thrust loads. And full-line contact between rollers and races provides maximum stability. Cost-saving results are: shafts are held rigid; gears mesh smoothly and accurately; shaft wear is eliminated; gear wear reduced.

Any machine with Timken bearings gives you extra benefits—the benefits of Timken Company leadership in tapered roller bearing design and in engineering service. It's leadership backed by the most modern

research and development facilities in the bearing industry. To get the most out of the machines you build or buy, specify Timken bearings. When you buy Timken bearings you get...

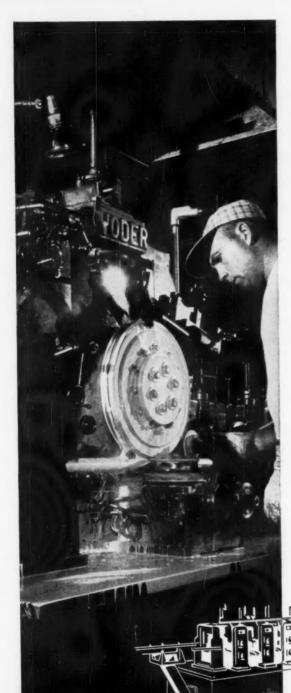
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- 2) Service you can't get anywhere else.
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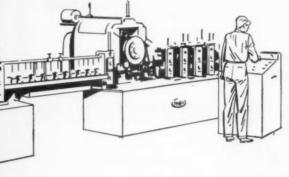
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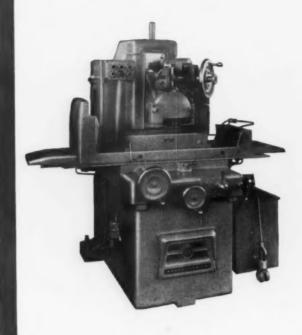
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- *AUTOMATIC DOWNFEED AVAIL-ABLE AS OPTIONAL FEATURE

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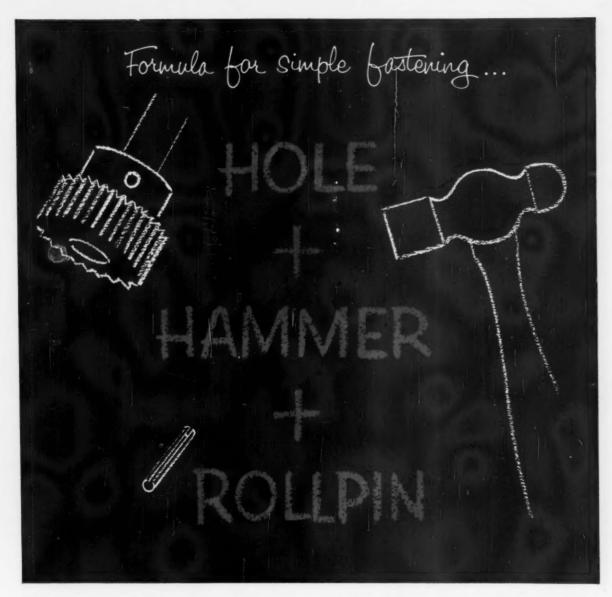


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ELASTIC STOP NUT CORPORATION OF AMERICA

Name	Title
Rollpin dimensional data Rollpin installation suggestions	Here is drawing of our product. What self-locking fastener would you suggest?
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Hydrofluoric Acid Aqueous

Hydrofluosilicic Acid

Laboratory Fluorine Cells

Lead Fluoborate

Lithium Fluoride

Metallic Fluohorates

Potassium Bifluoride

Potassium Chromium Fluoride

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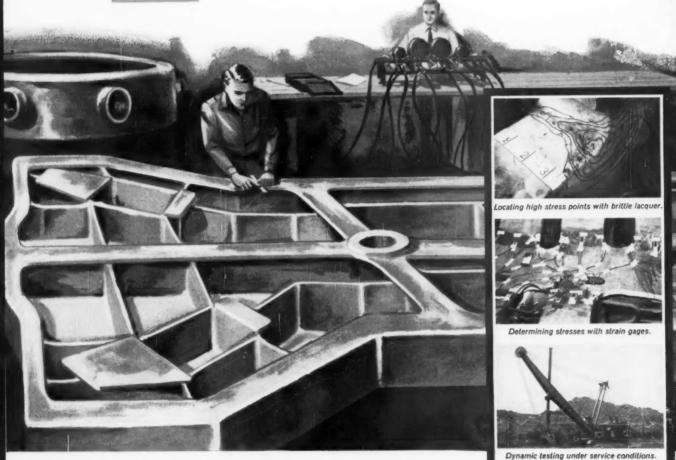
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... where industrial progress is cast in steel



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General Steel's activities extend far beyond the manufacturing process...into the area of checking existing designs for product improvement, and verifying new designs.

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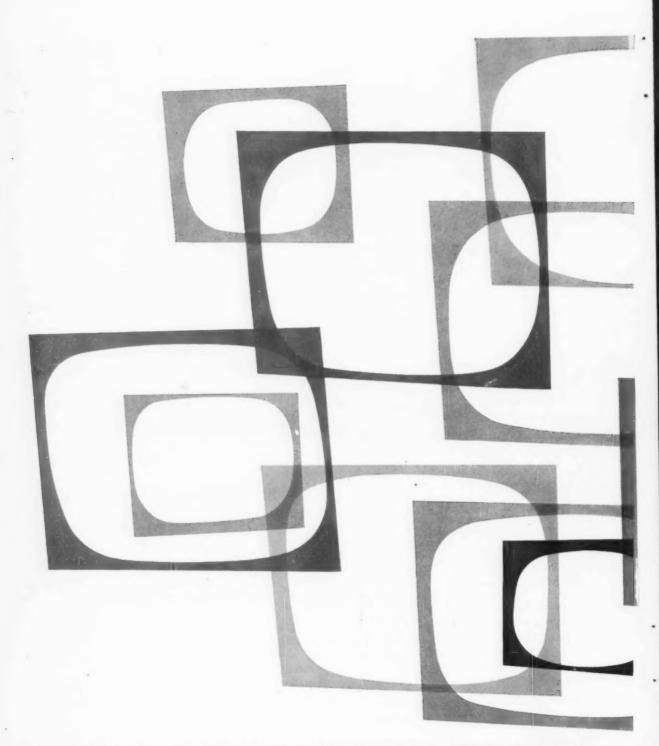
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Weirton Steel is a division of NATIONAL STEEL CORPORATION







This Lindberg Furnace, Model CT3848-A, is being used at Ingersoll Milling Machine Company, Rockford, Illinois, for hardening Ingersoll inserted blade milling cutter bodies and also for gas carburizing. It is equipped with Lindberg's exclusive CORRTHERM electric heating elements. Temperature range 1850° to 2000°F.

THIS VERSATILE LINDBERG FURNACE BELONGS IN MOST ANY METAL WORKING OPERATION

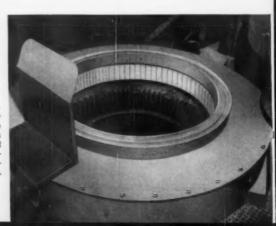
Heat treating installations across the country, captive or commercial, have found the versatility and dependability of this Lindberg furnace, either electric or fuel fired, a great production asset. Used at Ingersoll for hardening and carburizing, it is also ideal for a variety of heat treating needs including normalizing, annealing and tempering. This furnace occupies little floor space, handles a large volume of production and its rugged construction keeps maintenance costs uniformly low. At Ingersoll, it is one of several Lindberg furnaces in regular operation. Others include pit and box type Lindberg Cyclones and an L-type Furnace. Atmospheres are provided by Lindberg Hyen Generators.

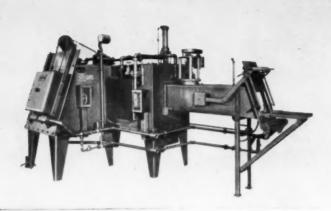
Lindberg has developed a wide variety of equipment for any industrial heat treating requirement. We provide everything from individual furnaces to complete, automated heat treating installations. These can either be factory-built or installed in your own plant. For the most satisfactory answer to any heat treating problem see your local Lindberg field representative (consult your classified phone book) or write direct to Heat Treating Division, Lindberg Engineering Company, 2452 West Hubbard Street, Chicago 12, Illinois. Los Angeles Plant: 11937 South Regentview Avenue, Downey, California. In Canada: Birlefco-Lindberg, Limited, Toronto.



Fixture being loaded with work while furnace is treating another load. Treated load will be removed and new load inserted quickly and easily.

CORRTHERM heating elements operate at extremely low voltage so heat leakage through carbon saturation is eliminated and shock or short hazard prevented. Makes possible use of electricity for carburizing without furnace retort.



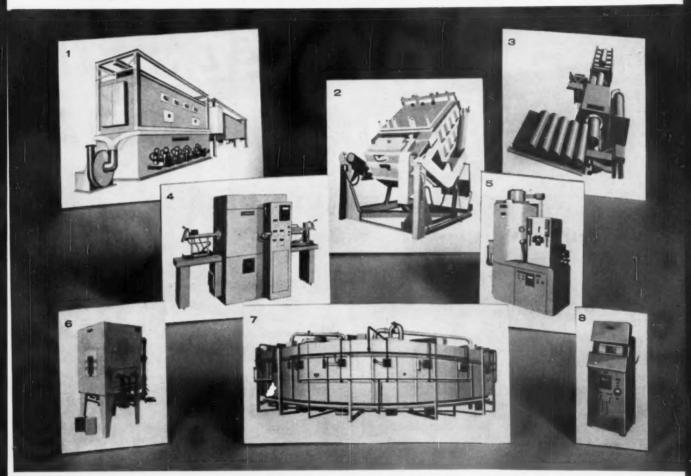


The Lindberg installation at Ingersoll includes one of our L-type Furnaces, ideal for treating high speed steel.



Atmospheres for Lindberg furnaces at Ingersoll are provided by Lindberg's Hyen Generator, a fully automatic process for producing endothermic atmospheres.

THERE'S LINDBERG EQUIPMENT FOR EVERY INDUSTRIAL HEATING NEED



- 1 Salt Bath Furnaces: Complete line of Lindberg-Upton equipment for all types of salt bath treatment. Shown: Installation for aluminum dip brazing.
- dip brazing.

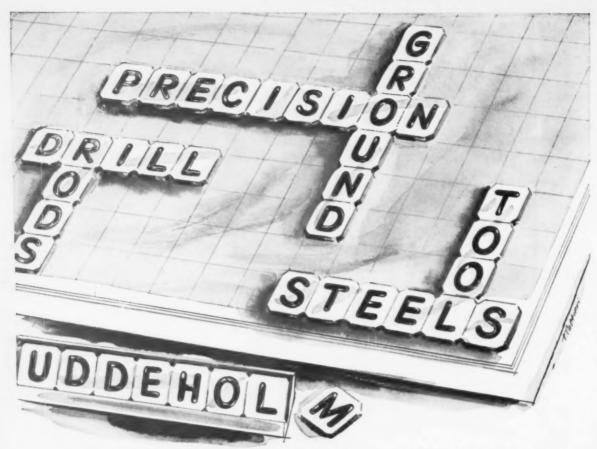
 2 Melting and Holding Furnaces: Equipment for any non-terrous metal requirement including electric resistance and induction reverberatories, crucible and two chamber induction units. Shown: 350 KW Induction Furnace with 30,000 lb. capacity.
- 3 High Frequency Units: Complete range of induction heating units and furniture. Shown: New Induction Billet Heater for aluminum extrusions.
- aluminum extrusions.

 4 Pilot Plant Equipment: Complete group
 of intermediate sized furnaces for pilot
 plant and small production application.
 Shown: New Graphite Tube Furnace,
 temperature range 2500°F, to 5000°F.
- \$ Atmosphere Generators: Generators for all required furnace atmospheres. Shown: Hyen Generator for endothermic atmospheres.
- matic, atmosphere controlled, high temperature, tunnel and periodics. Shown: Periodic Kiin, temperature range to 3250°F.
- 7 Heat Treating Furnaces: For every requirement, large or small, electric or fuel fired, facfory built or field-installed. Shown: Rotary Hearth Furnace field-installed by Lindberg Industrial Division.
- 8 Laboratory Furnaces: Complete line of laboratory furnaces from simple hot plates to apecialized research units. Shown: Versatile, wide temperature range Laboratory Box Furnace.

For full information on any type of Lindberg equipment see your local Lindberg field representative (look in your classified phone book) or write to Lindberg Engineering Company, 2452 W. Hubbard Street, Chicago 12, Illinois



ERG heat for industry

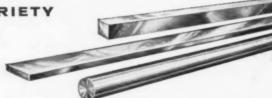


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Satisfy all your tool steel requirements at your Uddeholm Specialty Steel Service Center, where you can always receive expert technical aid in the selection and use of just the right type for your needs.

Precision Ground Tool Steel-flatstock—always free from decarburization—supplied in sizes close to or exactly that of the finished tool or die with extremely close dimensional tolerances. UHB 46 (SAE-01) is stocked from 1/64" to 2" thick—1/2" to 14" wide; UHB 151 (SAE A1) from 1/8" to 2" thick by 1" to 10" wide . . . in square or rectangular stock—18" long. Many sizes stocked in 36" lengths. Uddeholm, producers of the finest tool steels, assures you of the highest quality standards!



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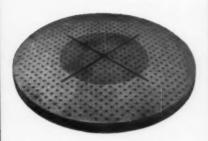
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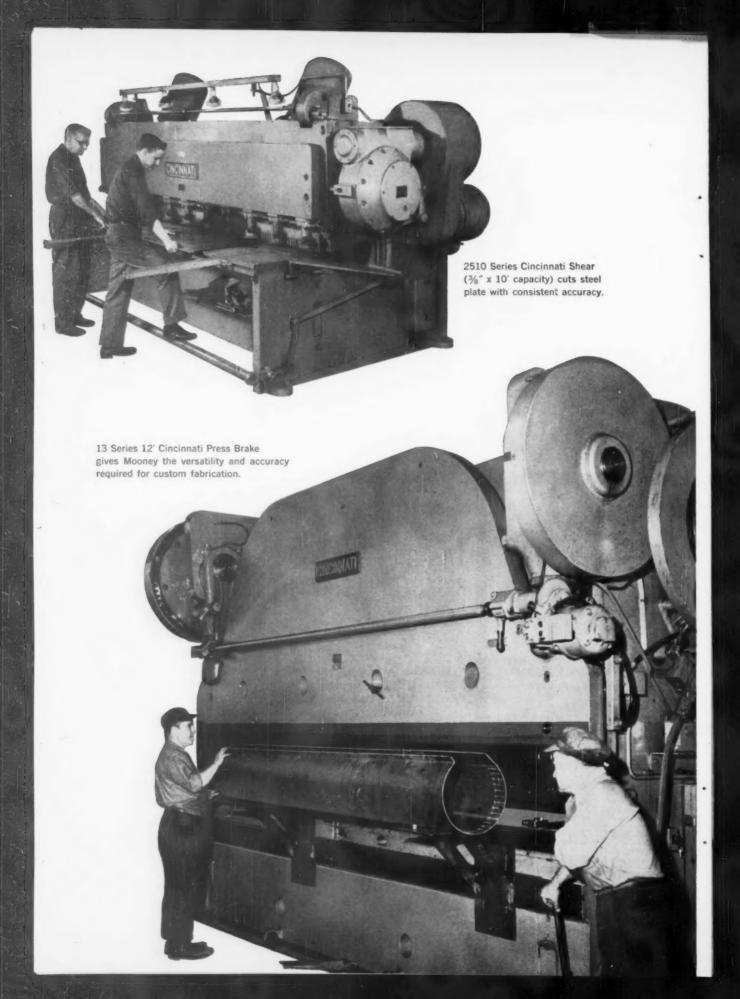
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By keeping costs down, this extra-rugged Cincinnati stamina helps Mooney compete aggressively and get new business. You can earn these same profits; put Cincinnati Press Brakes and Shears to work in your shop.

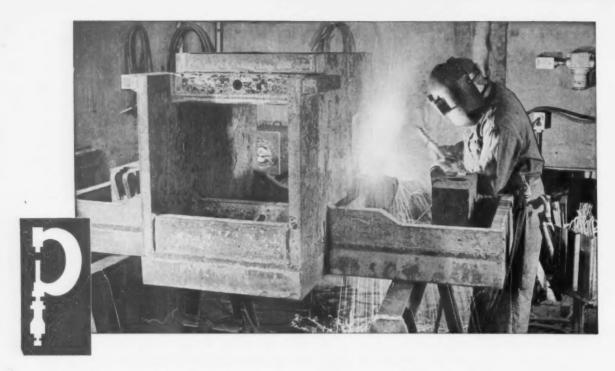
Write Dept. B for Bulletin CS-4, which covers all Cincinnati equipment.

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Parish has the overhead handling facilities, movable partitions and available floor space to handle any of your weldment jobs—and cut your production costs! For years Parish welders have skillfully handled jobs from one-of-a-kind to volume production in a wide variety of metals and alloys, ranging in thickness from forty-eight thousandths up to several inches.

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Parish weldments completely eliminate the inherent danger of "blow holes" which often boost production costs of iron castings.

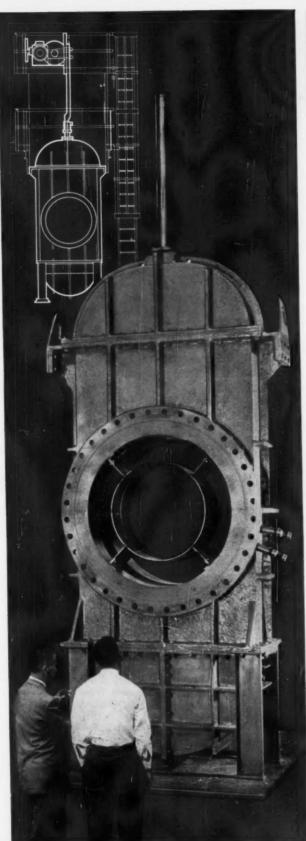


An illustrated booklet describes the diversified facilities available to you at Parish. Write now for your free copy.

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NEW

<u>fastest</u> way of changing blast furnace stoves

BAILEY WATER-COOLED GAS BURNER SHUT OFF VALVE

Full Open to Full Closed in 11 Seconds

Valve disc and body are water cooled to prevent overheating while the stove is on blast. Motor-operated drive unit is located on a platform above the valve, well clear of stove heat. This valve is bolted tight to the burner and stove saddle flange, thus preventing leaks at the burner. Write for Bulletin GB-100.

WILLIAM M. BAILEY COMPANY

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Trailer axles take shape as automatic butt welder upset flash welds spindles to each end of 40-inch lengths of Pitts-

burgh Steel Co.'s mechanical tubing at Kenton, Ohio, plant of Rockwell-Standard's Transmission and Axle Division.

An Axle Axiom: Long Service Life

Pittsburgh Steel Company's Seamless Tubes Give
Years of Service in Rockwell-Standard Corp.'s Trailer Axles

Mechanical tubing from Pittsburgh Steel Company covers a lot of ground —in truck trailer axles.

Pittsburgh Steel is a prime supplier of mechanical tubing to the Kenton, Ohio, trailer axle plant where the Transmission and Axle Division of Rockwell-Standard Corp. makes trailer axles for every major trailer manufacturer.

• Uses C1040 Grade Tubing— Rockwell-Standard uses AISI C 1040 grade hot rolled tubing, ranging from 4-inch outside diameter with a %-inch wall thickness to tubing 6 inches in diameter with ½-inch wall.

Typical tubing shipped to Rockwell-Standard is made of fine grained steel in a uniform hardness range which enables the customer to develop the final physical properties he wants by heat treatment.

Pittsburgh Steel tubing performs satisfactorily in Rockwell-Standard's processing operations and satisfies the ultimate user—the trailer manufacturer -because we meet these requirements from tube to tube and from shipment to shipment.

Hardness is a prime requirement because lack of uniformity would require more costly operations at Rockwell. With Pittsburgh Steel tubes, heat treating can be standardized with predictable results.

Weldability scores high. Long service life of trailer axles demonstrates the weldability of Pittsburgh Steel's tubing. With an average of 10 welds in every axle, welds have to be good. Strength and porosity tests prove they *are* good.

Freedom from scale helps promote predictable results from heat treating. Scale would produce steel with different rates of hardness after heat treating. No de-scaling operation is necessary with Pittsburgh Steel tubes.

Uniformity of wall thickness helps to prevent warping of axles in oil quenching and eliminates re-straightening in many cases or holds such operations to a minimum.

• Tubing first is cut to length by Rockwell to make axles which will track either 70 inches or 71½ inches, both standard widths. Forged spindles then are flash upset welded, one on each end of the tube. Welds are made simultaneously.

Next, tube and spindle assemblies pass through a high heat furnace on a moving conveyor. For the two hours each assembly is in the 60-foot long furnace it is subjected to a temperature of 1500 degrees F. Each 1½ minutes, an assembly emerges from the furnace to be oil quenched.

To temper the assemblies to the desired Brinell hardness, each passes through a draw furnace where it soaks for an hour in 1000 degrees F.

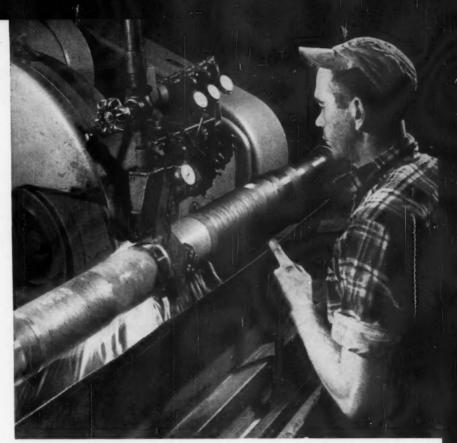
Rockwell-Standard wants a rating of 269 to 321 for spindles and 218 to 269 for tubing.

Axles then are cleaned by shot in a Wheelabrator and moved to the Machine Shop. Spindles are machined to final contours, welding flash is removed and threads are machine rolled.

• After accessories, like spider brackets, diaphragm brackets and cams are welded to the axle, stress relief follows to ease strains set up by welding. An hour's treatment at 900 degrees F. does the trick.

On the final assembly line, each axle gets a brake system fitted to the brake spiders. Nylon support brackets and grease fittings are added, the axle is greased, painted

Close-up of brake spider being submerged arc welded. Four welds are made simultaneously.



Pittsburgh tubing, five inches in diameter, is being ground to 4.880 inches to meet specifications.

and moved to the shipping platform.

You don't have to be a manufacturer of axles to enjoy the same benefits that Rockwell-Standard gets from Pittsburgh Steel tubing.

Any tube user who wants to lower production costs while making a better product can profit by using Pittsburgh Steel tubular specialties.

You get the physicals you want and you can expect better performance in fabrication. Talk to a Pittsburgh Steel man today. You'll find him in one of the district offices listed below.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company Los Angeles, California

Chicago Tube & Iron Company Chicago, Illinois

Cleveland Tool & Supply Co. Cleveland, Ohio

Drummond McCall & Co., Ltd. Montreal, Quebec, Canada

Edgcomb Steel Company Philadelphia, Pennsylvania

Gilmore Steel & Supply Co. San Francisco, California Earle M. Jorgensen Co.

Perry Kilsby, Inc. Los Angeles, California Mapes & Sprowl Steel Co. Union, New Jersey

Metal Goods Corporation St. Louis, Missouri

Miller Steel Company, Inc. Hillside, New Jersey A. B. Murray Co., Inc.

Elizabeth, New Jersey

C. A. Russell, Inc. Houston, Texas

Ryerson, Joseph T. & Son, Inc. Chicago, Illinois

Solar Steel Corporation Cleveland, Ohio

Steel Sales Corporation Chicago, Illinois

Chicago, Illinois Tubular Sales

Detroit, Michigan

Ward Steel Service Company
Dayton, Ohio

Pittsburgh Steel Company Grant Building Pittsburgh 30, Pa.

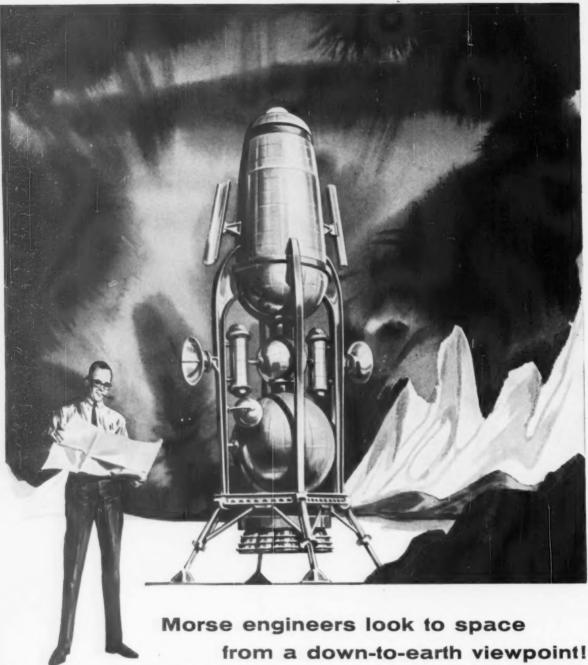


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Sky is never the limit with the research and development staff working with the broad facilities at Morse.

Morse has grown up with the automotive industry. Its specialists have worked with designers and engineers in developing and perfecting the products of their imagination.

For more than 60 years, Morse has specialized in the science of kinematics. Perhaps its best known products are basic chain drives, gear reducers, couplings, and clutches in more major fields than you could count on the fingers of both hands.

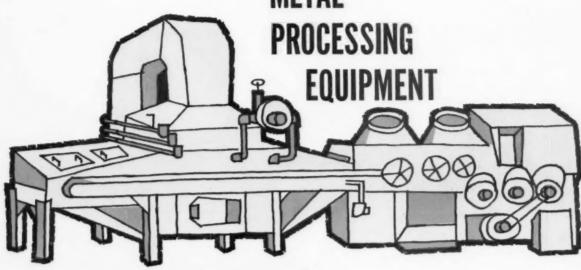
Morse engineers, supported by Borg-Warner's ultra-modern research laboratory, can now offer a better way of giving your ideas a boost, and provide down-to-earth solutions to your problems in the race for space. Consult: Morse Chain Company, Dept. 33-10, a Borg-Warner Industry, Ithaca, N.Y. In Canada: Morse Chain of Canada, Ltd., Simcoe, Ontario.

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This approach is unique with us, because we're the only supplier who provides complete lines of both metal preparation equipment and chemicals . . . and renders continuing, on-the-spot service on both from coast to

The Pennsalt System Approach is unique, too, in the way it consistently pays off in highvolume production, top quality, low costs. We'll be glad to show you how it can work for you. Write for free Booklet 306, "The Pennsalt Metal Preparation Service Plan".

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watch these giant workers chip away costs!

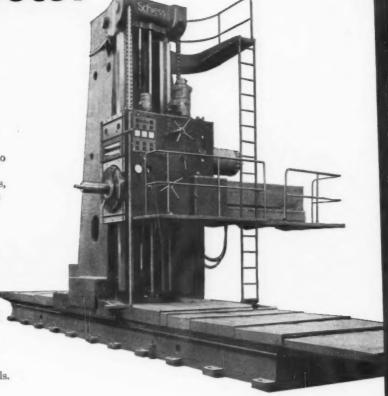
This 8% in. SCHIESS model BF horizontal boring and milling machine...

now completely redesigned with many innovations. Here are a few . . .

Two individual drives—gear-drive for roughing, belt-drive for finishing. Belt-drive particularly suited to high-speed machining with carbide tools. New tool clamping device—does away with draw keys, hammers, drifts and binding screws. All spindle-slide movements controlled from easily accessible operating platform (or from pendant station or portable control panel, if desired). Special main-drive belt requires no readjusting. Column, spindle-slide and boring spindle may be adjusted at rapid traverse.

Spindle diameters, 6-5/16" to 8-7/8". Maximum diameter bored, 59"—faced, 79".

It takes Europe's largest builder of heavy machine tools, Schiess, to turn out giants like these. Parts and service as close as Pittsburgh. And an American Schiess engineer will be happy to help you size up these heavy producers for your heavy production needs. Write for catalogs and complete specifications on all Schiess BF and K models.



This 32 ft. SCHIESS model GK vertical boring and turning mill...

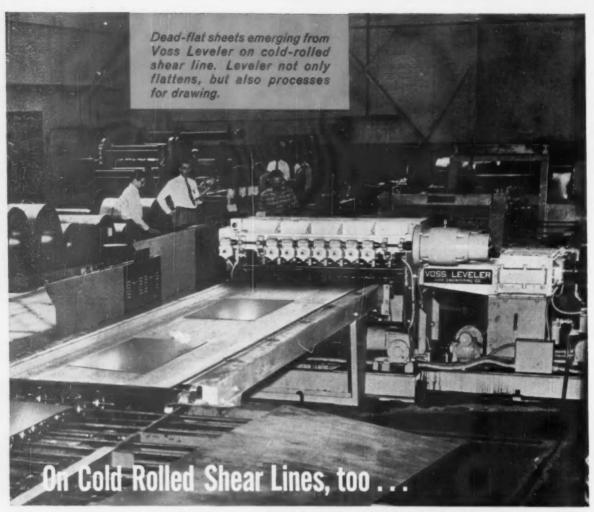
Look at all these new features of the most modern vertical boring mill of its type: Two ram heads on the rail, one of which is tracer-controlled. One milling head on the rail which can be parked on the left side rail extension. Dual tables-one 15' table on the inside, a 32' table on the outside. Each table has independent drive, or both tables can be used together and synchronized as one. Table equipped with indexing device to be used for indexing layout work. Machine will swing a maximum diameter of 40'. Rapid traverse motions with pushbutton control of changeover from feed motion to independent power traverse. Electro-mechanical locking of cross-rail to columns. Fingertip speed control-counter-balanced cross-rail and side-headcompletely enclosed swiveling octagon ramspendant control-automatic lubrication.

Have you ever seen anything like it?

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VOSS LEVELERS EQUAL OR EXCEED STRETCHER-LEVEL FLATNESS

Voss Inverted Roller Levelers are giving the same high performance on cold-rolled steel as they do on galvanized and hot-rolled products. One large producer reports that sheets from 85% of a light-gauge cold-rolled coil are leveled to stretcher-level flatness. Furthermore, this same operator has reduced rerolling by 25%.

Another example: A maker of wall panels eliminates time-consuming inspection and sorting of individual sheets for flatness. By leveling them with a Voss, he automatically assures panel flat sheets

without further checking.

User after user tells of increased quality and lowered costs resulting from Voss Roller Levelers. Voss-patented exclusive design features assure extreme flexibility of application and precise area control on any section of a sheet or coil. Whatever your application—galvanized, hot or cold-rolled, strip, coils, sheets or plate, ferrous or non-ferrous—Voss has a quality-making, profit-making story for you. Write today for detailed information and a list of users.



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No other metal offers the freedom of design and fabrication, economy of care and the durable beauty that serves and sells like Stainless Steel.

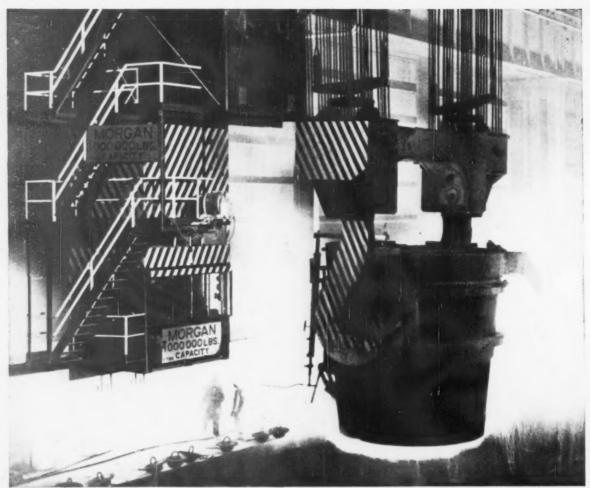
McLOUTH STEEL CORPORATION, Detroit 17, Michigan



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McLOUTH STAINLESS STEEL

for automobiles



Repeated million-pound loads in the intense heat from 375 tons of molten steel, cause no spalling or deformation of Rollway Bearings.

1,122,000 Pounds Ride on 68 Rollway Bearings

One of the largest in the world, this 500-ton Morgan-built ladle crane is Rollway equipped in many positions.

Sixty-eight maximum-type, solid-cylindrical bearings—mounted without inner races—lift and lower the 1,122,000-pound weight of the lifting beam, ladle hooks, ladle and white-hot steel.

Rollway Tru-Rol® type bearings are used in the two General Electric 360 HP – MD-620 Hoist motors which lift the weight of the ladle and its molten metal content.

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Sheaves ready for assembly on shaft and installation in lifting beam.

rollers and plates to prevent Brinelling and assure freedom of rotation under the heaviest loads.

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BLAW-KNOX

engineered production equipment for the Steel Industry

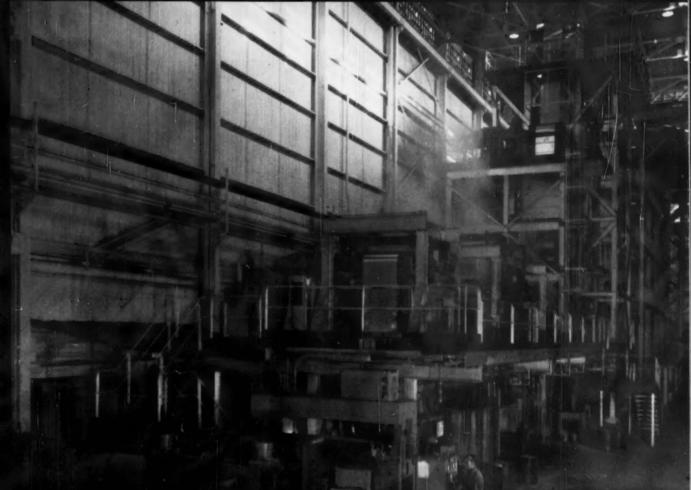
Blaw-Knox offers a complete service for the design, manufacture, and construction of steel rolling, processing, and finishing plants. In addition to these major installations, Blaw-Knox furnishes steel plants with a wide variety of products for use in operations ranging from iron making to cold finishing. The engineering force and plant capacity behind these specialized services and products are unsurpassed in the industry. They will continue to give exceptional service to the steel industry to help meet its constantly increasing production requirements. Blaw-Knox Company • Blaw-Knox Building • 300 Sixth Avenue • Pittsburgh 22, Penna.

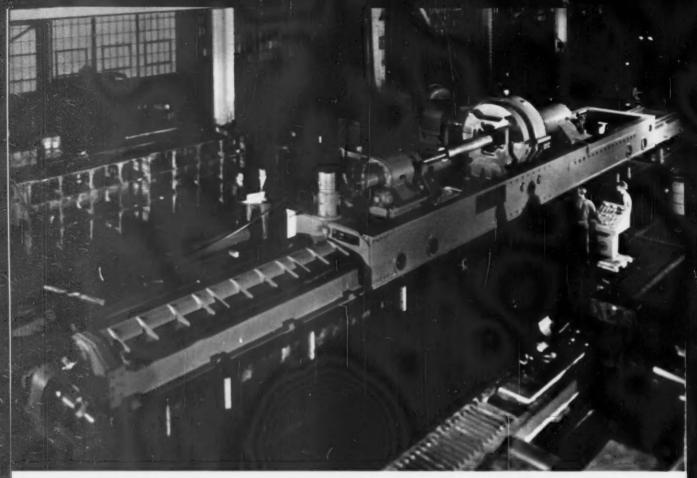
46- x 90-inch Universal Slabbing Mill



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Blaw-Knox Medart Tube Turner uses carbide tools for finishing heavy walled tubing from 9 to 26 inches in diameter.



Blaw-Knox Iron and Steel Foundries furnish Iron, Alloy Iron, and Steel Rolls, Carbon and Alloy Steel Castings, and heat and corrosion-resisting Alloy Castings.

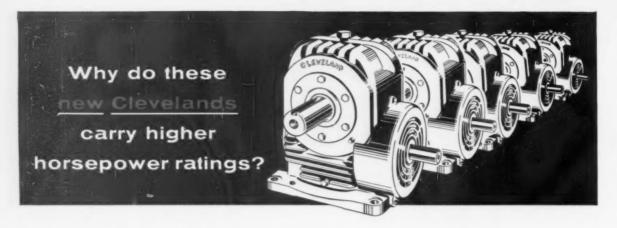


Typical of Blaw-Knox mechanized Steel Plant Accessories is the Autopour® which makes possible safe, automatic teeming of ingots from remote locations on the pouring platform.

BLAW-KNOX

- THE RISE TO A RECORD RATE OF INDUSTRIAL PRODUCTION in 1960 will be led
 by the steel and automotive industries. But they will need
 support in the second half if the overall rate is to be
 sustained. Capital spending may be the surprise factor if
 the first half surge generates enough industrial momentum.
- THE STAGE IS ALREADY SET FOR A ROUND of new equipment buying by the steel industry. Emphasis is on new developments, not traditional facilities. Oxygen steelmaking, ore beneficiation, improved rolling facilities are a few of the areas where spending will be heavy.
- WIDER USE OF ALUMINUM will be the principal factor in record shipments this year. Automotive use of aluminum is expected to increase 40 pct. Architectural and building use is expected to rise 30 pct.
- AUTOMAKERS EXPECT THEIR THIRD BEST YEAR, with production of 6.5 million cars and 1.2 million trucks. Total new car passenger sales this year will run up to 7 million. The difference is about 500,000 imports. But even at that rate, it will represent a drop of 100,000 imports from 1959.
- RESEARCH EXPENDITURES FOR THE NATION are running well ahead of predictions. If R & D spending hits \$12 billion this year, that figure will be about two years ahead of schedule. U. S. companies are spending about 2c of every sales dollar in laboratories and research centers.
- REGIONAL NOTE FROM THE PACIFIC COAST: The 13 western states are expected to use eight million tons of steel this year as the area continues to grow industrially. That's 10 pct more than the previous high set in 1957. The region will also consume 15 pct of the national aluminum output.
- AS A MIRROR OF GENERAL EXPECTATIONS of business, the railroaders are counting on significant improvements early this year. The quarterly forecast of revenue freight loading indicates an increase of 5.9 pct in first quarter car loadings over 1959.

 Biggest regional increases: Great Lakes, 18.4 pct; Allegheny, 11.3 pct, Atlantic States, 9.9 pct.
- INDUSTRIAL HEATING EQUIPMENT ORDERS in November were up 51 pct over the same month in 1958. Induction heating equipment orders jumped even more, 169 pct, according to the Industrial Heating Equipment Assn., Inc.



It's because Cleveland design engineers — drawing on 47 years of experience — have successfully blended the *just right* combination of housing design, exclusive heat-treatment for alloy steel worms, centrifugal casting of bronze gear rims together with larger, more rugged taper roller bearings on worm and gear shafts.

This permits substantially higher horsepower ratings with smaller worm and gear units — units that more than meet AGMA's new Standard 440.03. Cleveland now offers speed reducers — from one to forty horsepower — at savings of 50% or more on cost per horsepower.



HOUSING is a rugged one-piece design of highest quality cast iron, ribbed for maximum strength and heat dissipation. Cooling fan

of unique design is mounted on *input* end of worm shaft and is equally efficient in either direction of rotation. Only one gear shaft bearing plate is large enough to permit assembly of the gear. On gear shaft extension side, gear shaft bearing is mounted in the housing bore and backed up by a clamping plate. This gives a stronger housing and provides maximum strength for overhung loads. Housings are designed for mounting in one position only, thus avoiding design compromises necessary with *universal mount* types.



BEARINGS on both worm and gear shafts are Timken taper roller-type, providing adequate thrust and

radial capacity. Worm bearings are mounted directly in housing bore for greater rigidity.



WORMS are cut integral with shaft and accurately ground to a high surface fin-

ish on both thread flanks. Shaft extension diameter is especially large to permit increased overhung load capacity. An exclusive heat-treating technique provides a high degree of hardness throughout the entire thread thickness and well below the worm's root diameter. It gives maximum thread strength and resistance to wear without losing the advantage of a tough core of medium hardness.



GEARS have centrifugally cast bronze rims with a high tin-nickel content. They provide greater density and a

higher hardness, giving increased resistance to wear and fatigue pitting. Bronze rims are centrifugally cast integral with cast iron centers, in smaller sizes up to 6 inches, which permits strong mechanical keying of the two parts — without dependence on actual surface bond. Gear shaft extension diameters are especially large to permit greatly increased overhung load capacity.

ORIGINAL MASTER WORMS for each size and ratio of worm gearing, are made individually in Cleveland's tool room to extremely close tolerances and kept in perpetual stock. Cleveland makes all their hobs. No outside source has been found that can produce worm gear hobs to their exacting tolerances and standards. Each hob is checked against this master worm — as are production worms and gears. Thus, it's not necessary to ever replace Cleveland worms and gears in sets. A new gear will operate perfectly with an old worm and vice versa.

Call your Cleveland Representative today, to get all the facts on these new, more powerful speed reducers. Or, write for a copy of new, free Bulletin No. 405 giving complete engineering information.

The Cleveland Worm & Gear Company, 3282 E. 80th St., Cleveland 4, Ohio.



A subsidiary of Eaton Manufacturing Company

CLEVELAND
Worm Gear
Speed Reducers

Affiliate: The Farval Corporation

Only a Few "Ifs" as Business Heads for New Records

Steel and automotive industries lead the way as a first half boom gets under way.

But they will need support if a record rate of production is to be sustained.

Factors not apparent now may determine whether the boom lasts.—By R. D. Raddant.

■ What are the forces expected to push U. S. industry to new record production in 1960?

And, probably more important, will business hold at, or close to, the record high level? Or will it come tumbling down in a 1957-style decline after the upturn levels

off near the middle of the year.

Answers at this point, of course, are based on the dual assumption that there will be no crippling labor strike, and that no world conflict will bring on international chaos. If either occurs, all bets are off, all predictions are out the window.

Steel Leads the Way—As a result of 1959's 116-day steel strike, the steel industry is left with a deficit of some 20 million tons of steel to make up. With this added on to a good rate of steel consumption, the steel industry will lead the way to the first half boom.

The auto industry, flushed with success of the compact cars and other new models, will be another STEEL SETTLEMENT

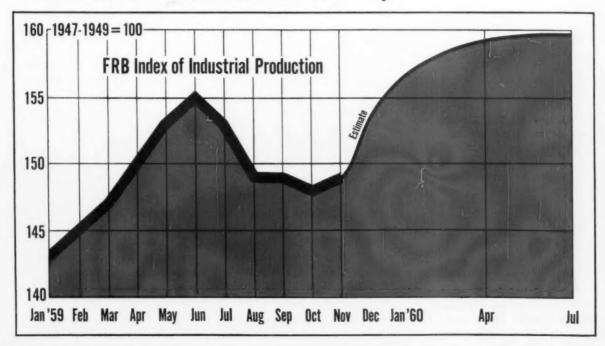
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major force in the economy. Particularly in the first half, automakers will push to the limit.

Little Other Support—These industries, steel and automotive, will be the principal impetus behind the upswing, already apparent in the early days of the new year. But after these two, the outlook is good, but far from sensational. Other than steel and automotive, no major in-

Production Headed for the Top



How the Experts See 1960 In NICB Forum

Gross National Product

(Billions of Dollars)	4th Qtr '59	2nd Qtr '60	4th Qtr'60
High	487	510	525
Low	475	495	498
Average	481	506	516

Industrial Production Index

(1947-49=100)			
High	152	168	165
Low	144	152	150
Average	148	160	160

Consumer Price Index

(1947-49=100)			
High	126.0	127.0	128.0
Low	124.8	123.7	123.0
Average	125.5	126.0	126.5

*B. F. Smith, U. S. Steel; G. P. Hitchings, Ford; W. E. Hoadley, Jr., Armstrong Cork: L. J. Paradiso, Dept. of Commerce; I. T. Ellis, du Pont; M. P. McNair, Harvard; A. D. H. Kaplen, Rollins; N. M. Koffsky, Dept. of Agricul ture; E. B. George, Dan & Bradstreet; O. G. Saxon, Ydle; Solomon Fabricant, National Bureau of Economic Research; Jules Backman, NYU; R. L. Reierson, Bankers Trust; R. D. Nacss, Nacss & Thomas.

dustry is expecting a demand and output of boom proportions.

There is one sleeper — capital goods. The IRON AGE-National Industrial Conference Board surveys of metalworking capital appropriations indicate an upswing in capital spending. This is despite declines in the second half because of the steel strike.

Could Be the Difference—Indications now are that spending has been deferred, but not cancelled. There are other indications that capital spending is beginning to stir. Delays have built up a backlog of appropriations yet to be committed. This could be the difference between a comparatively short upswing and a sustained high level of business.

In a way, the business outlook for 1960 is reversed. Steel production usually is a follower, in that demand for steel and steel products follows demand for finished consumer and manufacturers goods. Record Probable—But the strike turned this around. Now, steel users have to meet the demands of their own sales, then add the 20 million tons of steel that was lost in the strike. This 20 million tons includes lost steel production, plus steel in pipelines, in-process, and sales of finished products that were lost because of lack of steel.

Steel consumption in 1960 is estimated at about 110 to 115 million tons, a creditable year. But with the 20 million ton deficit, actual production should hit nearly 130 million tons, allowing for evaporation of some of the deficit. This will be a new production record,

Wagging the Dog—But as Bradford F. Smith, U. S. Steel Corp. economist asks: What will happen when the deficit is made up, probably some time in the third quarter, and the tail ceases to wag the dog?

Generates Momentum—Business booms like the one assured in the first half have a way of generating their own momentum A high rate of disposable income creates its own demands that are not readily apparent at the start of a boom.

This includes appliances, new cars, houses, and expenditures of all kinds.

It also generates a desire for capital goods that is not apparent when an industry is confronted with an excess of capacity. A high rate of production demands greater efficiency. Competition demands lower costs. This means new equipment.

That is why it is entirely unlikely that the economy will go into a backslide when the 20 million tons of steel deficit is restored.

New Developments—There are other developments not generally recognized that have crept into the economy in recent years. They will bear watching as the months of 1960 unfold.

One is the development of automotive and other consumer durables market as a highly volatile market. It is probably the most sensitive element in the economy.

This is because an auto or appliance purchase can be easily deferred (most are accompanied by disposal of a serviceable unit). It means tying up a large part of a family's discretionary income for a long time. This is a major reason why the auto market in particular is no longer predictable on the basis of routine economic factors, but on attitudes and opinions not easy to pin down.

Housing Market—Another is the development of the housing market as contra-cyclical, something new to the economy in recent years. This is because the Federal government tends to aid the housing industry in bad times (easier credit and mortgage aid) and toughen up in good times.

The result: In the face of an impending general boom, few economists predict more than 1.2 million houses started this year. Talk on the housing market now takes the tone of "politically allowable," not the ways of the business cycle.

R&D Outlays Due for Big Boost

They Could Reach About \$12 Billion This Year

Industry will provide the big push, but government expenditures will hold at high level.

Emphasis will center on search for new materials to meet future needs of both private industry and defense projects.— By K. W. Bennett.

■ Research and development outlays may hit \$12 billion in 1960, according to Kenneth Anderson, executive vice president of the Scientific Apparatus Makers Assn. Other estimates talk of a 5 to 15 pct gain in dollar outlays for research.

Previous forecasts, made as recently as 1958, didn't expect research dollar volume to hit this level until 1962—at the earliest.

The Big Push—Main source of the big push is industry. U. S. firms have been spending about 2¢ of every sales dollar in their laboratories, in a search for new materials and new processes. A few leaders, notably the chemical, electronic, and airframe industries, have already pushed outlays as high as 6¢ of every sales dollar.

It is now expected that 1960 will see the national average break free and push up through the 2¢ figure to nearly a 3¢ rate by year's end.

Government Support — At the same time, U. S. Government-sponsored research will hold at a \$3 billion level. Some sources believe that government expenditures will rise again as the new fiscal year begins in July.

Cutbacks in defense outlays have generally involved production of military hardware that is already past the development stage. Hence, the Dept. of Defense's economy drive will not greatly affect the Federal research picture.

Seek New Materials — Research

men expect 1960 to see a concentration of research dollars in new materials: steel, refractory metal alloys, aluminum alloys, and a number of the nonferrous metals, are slated for a strong push from laboratories during 1960.

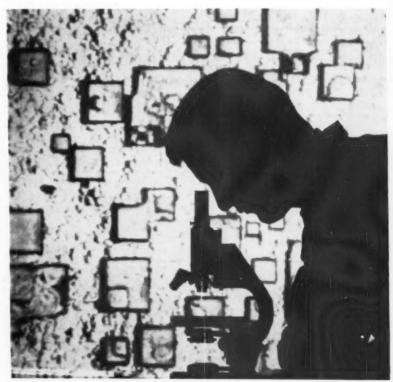
Government research is still sparking a hot hunt for materials that will hold strength at temperatures of 2-4000°F. But higher strength-for-weight ratios will be a prime target in a great number of materials research projects sponsored by industry.

Wanted: Research Talent—The temporary slack in demand for engineers and other college graduates who might fit into a research lab, apparent in 1958, is already past

history. This year has seen a fresh speedup in the hunt for research talent.

In 1960, salary offers to new college graduates will again advance. Industry will be vying for top men in the new college graduate crop. Despite a pickup in college enrollment of students aiming for a scientific career, demand will outstrip the supply in 1960 by a wider margin than during 1959.

More Research Grants — Research grants by trade associations are expected to hit a record during 1960. Societies representing some branch of metalworking have been active in 1959, and are scheduling research boosts for 1960.



SCIENCE SEARCHES: A large portion of research funds will be spent in the search for new materials such as a new "four-way" magnetic steel developed by Westinghouse Corp. and Vacuumschmelze of Germany.

Steel Spending Due to Climb

Technological Advances Force Mills to Modernize

Mills are assured prosperous operations through the first six months of 1960 and longer.

Capital spending should start climbing to take advantage of the latest developments in making steel.—By G. J. McManus.

• All signs point to a strong capital push for steel in 1960.

The new year finds mills at that point in the recovery cycle when capital dollars have always started to flow. This time a wave of technical advance is bringing extra pressure for action.

Now the stage is set for actual spending to take off. According to Commerce Dept. estimates, steel spending (seasonally adjusted) will jump nearly 40 pct in the first quarter of 1960.

Plan to Spend—Figures from The IRON AGE capital appropriations survey (Dec. 17, 1959, P. 137) indicate a capital outlay gain of \$70 million for the full year 1960. This would put steel spending at about \$1.1 billion for the year. And fourth quarter appropriations figures could revise the estimate upward.

Survey findings are backed by reports from producers of steel mill equipment.

"Things look very promising," says G. G. Beard, president of United Engineering and Foundry Co. "They have to look promising if all the forecasts mean anything.

And the current volume of inquiries points to a very good year."

Pressures for Progress — Strike losses are the one question mark in the steel picture. Last year's strike reduced the supply of capital dollars. On the other hand, the strike left a backlog of delayed construction. And it assured the mills of prosperous operations at least during the first half of 1960.

Moreover, technical improvements are coming too fast for the mills to sit still long. New avenues of advance keep opening up to push steelmakers deeper into development work and new construction.

Developments have reached the point where they demand capital spending by the mills. In the case of oxygen vessels, for example, equipment men can show how older shops can save enough to pay for the vessels in less than two years time.

Beneficiation Progress—Economics like this have led to projects representing another 7 million tons of basic oxygen steelmaking capacity. And suppliers say two more jobs could break any day.

Ore beneficiation and blast furnace modernization are in much the same class. Using taconite pellets, Armco Steel Co. last May averaged close to 2700 tons a day on a blast furnace at Middletown, O. Koppers Co. is talking about a blast furnace that would operate with 40 lb top pressure and turn out 4000 tons a day. Prefluxed sinter is bringing a sharp reduction in coking rates.

Ore beneficiation progress has moved forward so rapidly it has tended to slow construction. Three new sintering lines are going in but, for the most part, mills are holding back big projects. They fear a better method of agglomeration may be found after commitments have been made for the previous best.

Advances in Steelmaking

Here are the latest developments in:

Blast Furnaces—Higher top pressure, natural gas enrichment, and other improvements are drawing strong interest. New construction lags, but mills are enlarging and modernizing furnaces.

Sintering—Recent results with pellets have brought a review of the whole beneficiation program. New briquetting techniques could be a sleeper. New construction has slowed.

<u>jects call for LD vessels twice</u> the size of units now operating. There is active interest in new construction.

Rolling Mills—Trend is toward bigger, faster mills and more precise control. Improved design hot strip mills are the center of new construction plans.

Direct Reduction—Ability to reduce complex and low-grade ores is assuming greater importance. Interest is high for a wide range of applications.

Vacuum Treating — Larger ingots and lower alloys mark progress here. Vacuum degassing is attractive to tonnage producers.

Controls — Computers are coming into the picture for process control and data analysis. Coming up fast are controls that will analyze experience and optimize processes. Diminishing Returns?—Only two new blast furnace projects are in the works and timing is uncertain for both. However, a vast amount of modernization work is underway. Mills are playing with high top pressure, natural gas enrichment and other innovations.

Basic roofs and oxygen jets are souping up the production of openhearth furnaces. However, a top engineer for one mill points out that a mature process like openhearth steelmaking is closer to the point of diminishing returns than newer methods. It is significant that only one new openhearth job is known to equipment men at this time.

Rolling in High Gear—In rolling mills, the trend is toward bigger, faster equipment with better control. For its Great Lakes division, National Steel Corp. is building a hot strip mill that will roll 30 ft slabs into 75,000 lb coils at speeds up to 3000 feet per minute.

At Indiana Harbor, Ind., Youngstown Sheet & Tube Co. is building a six-stand tandem cold mill that will roll 62,000 lb coils at speeds over 7200 feet a minute. It will be the world's fastest mill, and will be the first six-stand mill of this type ever built.

Equipment producers say the newer mills put pressure for modernization on the whole industry. This is particularly true, they say, of hot strip lines. Republic Steel Corp. and Crucible Steel Co. of America are putting in new hot mills to roll stainless, alloy and other steels. Several other companies are currently revamping hot mills or have recently completed such projects.

Reducing Errors—Suppliers say the big boom has yet to come for rolling mills. Interest was strong in the first half of 1959 when National Steel announced its big program. Then labor negotiations seemed to slow programs. The hope, now, is that U. S. Steel's announcement of a new plate mill for Gary, Ind., may signal a general ice breaking.



LARGEST SINTER PLANT: Dravo Corp. is constructing the world's largest single strand sinter plant at Jones & Laughlin's Aliquippa Works.

New control developments are difficult to assess. Strain gages and new systems of speed control are reducing the margin of error for hot strip mills.

Computers are coming into the picture in a number of ways. One hot strip mill will use a computer system instead of program cards to select schedules for the mill. The computer will eliminate the need to keep track of a great number of cards. It will store and analyze results.

More Sophisticated Controls-

An application being considered for a plate mill will go a step further. Here the computer will actually devise schedules as it rolls. A slab will go through one or two feeler passes. The computer will determine properties of the steel from this experience. The machine will then come up with the best rolling schedule.

Control makers feel computers and other devices give better results. However, steelmakers are not entirely sure the improvement is always worth the cost. A complete computer system, with all instruments, costs about \$1.5 million for a reversing mill. This sum must be balanced against benefits that are often difficult to measure.

"We're rolling strip within 1 pct of gage," says one expert. "But we're allowed 10 pct variation. In this situation, it's pretty hard to justify further improvements."

Reduction Plans—Despite this, the mills are going ahead with more refined controls. Computers are going on an annealing line, a sintering line, at least one hot strip mill and at least one plate mill.

Among the new processes, direct reduction, vacuum treatment and pressure casting all made important gains last year. All have the potential for explosive growth.

Big Problems Face Congress

• An election-year Congress is getting back to work in what could easily be one of the wildest political skirmishes in 25 years.

The lawmakers are facing an election in an era when missiles are replacing rifles, nuclear disarmament displacing treaties, and a newstyle informed voter is likely to replace the old ward-heeling standby.

Political Bread—In kneading the political, economic, and philosophical dough that will become a legislative program, out of which foundations will have to be built for next year's elections, the members of Congress will be facing an unusual and explosive political situation.

Congress is not only controlled by Democrats bucking a Republican President, but this same President appears to be gathering his greatest strength as the end of his constitutional term approaches.

STRIKE LAW

There will be serious and determined efforts to push some new anti-strike or labor-management laws through Congress this year. It'll be an outgrowth of the crippling steel strike and its effects on government revenues as well as on the economy as a whole. Kickoff is coming from the Senate Labor Subcommittee, headed by Sen. John Kennedy (D., Mass.), in the current study of the steel strike. Other

studies will follow.

Proposals range from mandatory government arbitration in basic industries, to applying the anti-trust laws to huge labor unions. Outlook for action depends on the strike reaction in steel as well as in other industries, such as the railroads.

DEFENSE SPENDING

The shift from traditional war planning to the nuclear-missile short war defense system will become even sharper this year. Funds for new planes will continue to be reduced. Missile spending will take a huge chunk of the \$19 billion for military weapons. But it will be spent on fewer and fewer varieties as standardization hits the maturing missile industry.

Military research and development spending will continue to rise past \$4 billion, as will civilian space work. Metalworking's share of the defense dollar will decrease as more and more money goes for costly electronic gear.

ANTITRUST

Election-minded liberal congressmen are certain to make a strong bid for tougher antitrust laws. The pending premerger notification bill, backed by the Eisenhower Administration, stands a chance of passing. Some tougher marketing laws governing rebates, discounts, and pricecutting are possible, too.

STOCKPILE

The government's once - dying program may get a hefty shot in the arm this year. The present study of the stockpile theory, to take into a c c o u n t civilian reconstruction needs after an attack as well as military war supplies, will probably wind up this year. This could be the start of a new "finished-item" stockpile program.

TAX AMORTIZATION

The Korean war-born fast tax amortization program is a thing of the past. The final authority died Dec. 31, after the government permitted fast amortization of some \$25 billion toward facilities costing about \$40 billion. Officials say they will not ask Congress to restore the program.

COSTS

Congress this year will raise business costs on several fronts. None will be large, but they'll add up to more inflation. An election-year boost in social security benefits, and higher taxes to pay for them, is probable. Mailing costs are likely to go up by 25 to 50 pct. A higher minimum wage (up 25¢ to \$1.25 an hour) is a possibility. Several other similar measures are strong candidates for passage.

More for Missiles?



New Labor Legislation?





MOVING AHEAD: Equipment like this conveyor for coils will help speed record tonnage of aluminum to users.

Aluminum Expects a Record Year

Aluminum makers look for a banner year in '60 with shipments hitting a new high.

Auto industry and builders will continue as the top consumers.—By F. J. Starin.

• The aluminum industry expects a record year in 1960.

Frank L. Magee, president and chief executive officer of Aluminum Co. of America, set the pace with the opening statement in his year-end appraisal: "Shipments of U. S. produced aluminum during 1960 will be the largest in history."

Other Estimates — Donald A. Rhoades, president of Kaiser Aluminum & Chemical Corp., takes a slightly more conservative outlook. He admits 1959 was a year of "sizable increase in volume of shipments and many new products," then predicts that 1960 will be seven to ten pct better.

To round out the Big Three, Richard S. Reynolds Jr., president of Reynolds Metals Co., says, "In 1960, the industry will continue its vigorous growth . . . shipments should increase 10 to 20 pct."

Government View — Even the government, which probably won't be selling any aluminum this year, is optimistic. The Aluminum & Magnesium Div., Business & Defense Services Administration notes: "The 1960 outlook for aluminum is for continuing growth expected to be from two to two-and-one-half times the improvement in general industrial production."

The secondary arm of the industry expects to share in the boom. Carl Burton, secretary of the Aluminum Smelters Research Institute, Chicago, figures smelter ingot output should move up to about 400,000 tons in 1960, from 350,000 tons in 1959.

Price Worries-With production,

sales, and shipments all likely to hit new highs in 1960, are there any shady spots?

One is price. Producers recently moved their primary prices up 1.3¢ per lb, which they point out only recovers the price of 1957. The move was carefully made before new labor contracts were signed with United Steelworkers. Trade sources guess this is a sure sign aluminum producers intend to bump prices again.

Actual shipments are not likely to reflect true demand. Consumers have bigger than usual stocks.

But the naturally optimistic aluminum people even see some outs possible here. The government's aluminum experts say, "A reasonable expectation is for a 10 to 15 pct improvement in 1960 shipments to consumers. On the other hand, the development of a few new major uses may stimulate consumption even more."



IN STRONG DEMAND: Venezuelan iron ore from Cerro Bolivar is in heavy demand in world markets.

82 Million Tons of Iron Ore?

Because of the steel strike, American iron ore producers had their worst year since the 1930s last year.

Shortages will show up this winter and ore boats will be out early.—By T. M. Rohan.

■ Iron ore shipments were badly crippled by the record steel strike last year, but a big 1960 is expected.

Unusual aspects of last year's season were, of course, the strike, price competition, the growing inroads of foreign ores, and the overall surplus of standard grades.

Outside the U. S., booming European mills are paying a premium for high grade ore to keep blast furnace production high. They are scouring the world for new high grade deposits to exploit.

Dismal '59—The Lake Superior district, backbone of the U. S. industry, had its worst year since the late 30s with about 60 pct of its shipping season wiped out by the strike. Boats were still pushing ice in December and will be out at the first crack in the ice in spring.

The season's total output will probably reach about 44.5 million

tons, but about an 82 million ton year is in prospect for 1960. An early November freeze quickly chilled the hopes of many shippers of making up a lot of lost tonnage after the mills resumed work Nov. 7 under government order. Quite a few boats tied up for the year. But December brought a welcome thaw and shippers got a fortunate break.

Winter Woes — However, ore is still short at the blast furnaces. The shortage will get critical in February and March. No furnaces will shut down, but there will be a big checker game with grades and it will serve to limit production.

Meanwhile, Chicago mills hope to move 100,000 tons of taconite pellets from Minnesota by expensive all-rail shipment through the winter. Generally, users bought imported ore to average their costs rather than pay for winter rail shipments.

South American tonnage has moved steadily to the U. S. East Coast. Stockpiles at eastern railroad docks reached record high levels during the strike and year-round shipments continue.

Venezuelan ore is moving as far inland as Pittsburgh where it sells at only a modest premium over Minnesota ores on a delivered iron unit basis. Six Pittsburgh area mills are taking it on regular contract basis besides the parent company, U. S. Steel.

Prices Hold—So Far—Pricewise, ore is being held down by foreign competition, by the general excess of average grades, and by the parent steel industry's holding of the line on prices.

Internationally, Sweden, which traditionally sets the pattern for world prices, has indicated no change for this year. Producers in the U. S. have absorbed several successive wage and rail freight hikes since their last increase of 60 cents for the 1957 season. Last year they announced interim prices which would be reviewed June 30 when the new steel wage settlement was expected.

Imports During Strike—During 1959, Canadian, South American, and European ore (principally Swedish), poured into the U. S., largely uninterrupted by the steel strike. Imports through September hit about 25 million tons which was within hailing distance of the 1957 record of 33.6 million tons. The inroads of imports continue to grow greater through the years.

How New Labor Law Affects You

Landrum-Griffin amendment to the Taft-Hartley labor law requires some new reports from employers.

They close some loop-holes in T-H and provide added protection for employers and employees.

• How does an employer comply with the new labor law?

The fog of confusion still extends as high as some members of the National Labor Relations Board staff. But a few navigation lights shone through at the American Management Association seminar on the new labor law.

The new additions to Taft-Hartley are no Magna Charta for the employer. Government legal men caution that, if anything, the Landrum-Griffin additions to Taft-Hartley will make some areas of labor relations more difficult.

Political Bargaining—First: With secret ballots now required every three years at the local Union level, and every five years at the national level, some unions will have a greater problem in internal politics.

They'll have to approach the bargaining table, in election years, carrying a fistful of golden promises made to union voting members. They'll have to produce at least some results in the new contracts. So, the first warning note: "Expect tougher bargaining from many unions in election years."

Skirting the Law—Second: Management will have to adopt a strong attitude in defense of anti-hot cargo clauses and provisions prohibiting secondary boycott. One government lawyer comments bitterly: "We gave business management protection from the secondary boycott under the original Taft-Hartley Law. They promptly bargained away this new protection by allowing hot cargo contracts to be written into new contracts.

"The new Landrum-Griffin additions to Taft-Hartley close loopholes in the original secondary boycott, and make hot cargo contract clauses illegal. Now management had better get up on its hind feet and see that some new contracts don't get around the spirit of the new law."

Limbo Abolished-Management

must watch developments in the hot cargo clause of the new law closely. Some Washington sources believe these provisions may also have the effect of outlawing labor contract clauses which forbid subcontract work being placed by a struck plant.

Third: Management men must now take a direct interest in state and local court elections. The new law wipes out the "no-man's land" area of labor legislation, where neither the NLRB or state courts could act. Under the new law, all firms not reached by NLRB fall under state court jurisdiction.

Quickie Elections — Fourth: A law firm specializing in the field of labor law counsels: "Don't be alarmed by the 'quickie' election"—when a union is seeking to represent your workers. NLRB sources feel the "quickie" election is aimed at preventing long term pressure by a minority—who could swing an election if given time enough. Similarly, lawyers think it is to the employer's advantage to file a petition for a quickie election when an unrecognized union is picketing its plant.

Reports Required Under New Labor Law

The Landrum-Griffin amendment to the Taft-Hartley Labor Law requires employers to report certain expenditures in the field of labor relations. But there are still expenditures which you don't have to report.

You MUST Report Payments To:

- Investigators hired to get information on individuals trying to organize your employees, or with whom you are otherwise engaged in a labor dispute.
- Labor Union Officials or loans to them, just as before under old Taft-Hartley.
- 3. Labor Relations Consultants or other persons hired to attempt to influence employees in how they will bargain, or whether they will organize.

You DON'T Have to Report:

- Annual Employees' Picnic contributions, or donations to other recreational programs for employees.
- Trade Association Dues or assessments where the trade association collects wages and hours data for an entire industry.
- Lunches Bought for Union Officials. If you go much beyond meals, however, you are moving onto shaky ground.

Who Won in the Steel Contract?

"Recommended" contract cost the industry many of its issues.

Vice President Nixon was the big force in reaching the settlement.—By Tom Campbell.

■ The steel industry put up one of its most valiant fights to stop the wage price spiral. But it lost. At least part of the battle.

Heavy governmental pressure, through Vice President Nixon and Secretary of Labor Mitchell, broke the ice for a steel settlement. It is significant that chief company negotiator R. Conrad Cooper called it a "recommended" settlement—the same words used in IRON AGE's special Sunday release.

Left to its own devices, the steel industry would have gone down to the wire. But it was a question of employee election outcome. The high command in steel did not relish seeing a 90 or 95 pct vote piled up

against the companies—a figure believed probable.

Nixon Warns—Vice President Nixon privately warned steel officials that the government was ready to crack heads seeking an extension of the injunction and that Congress was in the mood for a compulsory arbitration. He was speaking the truth. So the industry gave in—under protest.

In the current settlement, the union won about everything it wanted except a complete carbon copy of the 1956 package. The fringe benefits were liberal and the wage increases during the second and third year of the contract are about what the union wanted. The immediate 4ψ an hour cost-of-living wage increase helps compensate for the lack of a wage increase during the first 6 months of the 30-month agreement.

Company Position — The steel firms lost about everything except

that they settled for about ½ the cost of the 1956 agreement. That one cost 81¢ an hour in the three years. The new one will run between 39¢ and 41¢ an hour for 30 months. At least the companies stopped outlandish wage boosts and if there is a price increase, as expected, it will be a moderate one.

The big crack in the steel picture came more than 2½ weeks ago when Vice President Nixon called Roger M. Blough, United States Steel chairman, and David J. McDonald, Steel Union chief, to his home for heart-to-heart discussions. Many other meetings took place after this major one. This was the second time Mr. Nixon dived into the thick of it. He tried, and failed, to obtain a settlement early last July. Then he missed it by an eyelash.

Final Stand-The 11 steel companies-in the last stages of the break which began two days before New Years day - appointed Mr. Blough, Arthur Homer of Bethlehem Steel, and Tom Patton of Republic Steel, to direct the industry's retreat in the face of government pressure. The 11 company heads agreed to the 40é 30-month package. Hard bargaining on the details, as the management and union negotiators filled in the framework, went on almost continuously and secretly from December 31 through January 4.

On 2-B—The famous 2-B hassle was settled on the union terms. The entire question will be studied by a joint committee.

Once again, for the sixth time in 23 years, the steel industry has felt the sting and power of union monopoly—and government pressure. The thing that hurts is that twice the government pressure come from a strong Republican administration. And most painful of all: The steel industry could have had a cheaper settlement last July when Mr. Nixon offered a helping hand to both sides.

IRON AGE Broke the Story

In every big news development, there is usually one news beat that stands out over all others.

In the recent steel negotiations, this honor belongs unequivocally to The IRON AGE — specifically to Editor - in - Chief Tom Campbell.

Hours before any wire service or newspaper reported any inkling of an imminent steel labor settlement, The IRON AGE at 1:30 p.m., Sunday issued a special release predicting the approaching settlement, and many of the details.

Even the conservative New York Times conceded: "The first intimation that the week - old drive by the two top Administration officials (Vice President Nixon and Sec. of Labor Mitchell) might head off a renewal of the costly tie-up came from IRON AGE."

Actually, it was the second significant beat of the negotiations for Tom Campbell. Months ago in the early days of the negotiations, he disclosed the industry's mutual assistance program.

The Editor-in-Chief has personally covered the entire negotiations. He actually started laying the groundwork for the anticipated bitter struggle back in 1956 when the old contract was signed.

The current beat recalls 1946, when The IRON AGE reported settlement of a previous steel labor negotiation several days before it was admitted by the principals.

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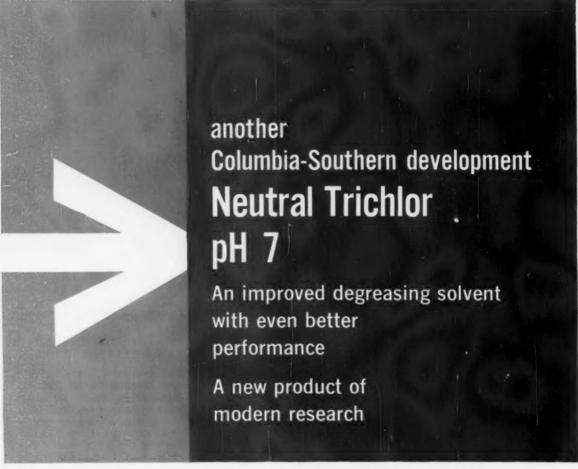
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John D. Williams

Business and Community Leader

John D. Williams is recognized as a leader in business. But he is also active in civic affairs.

He is a firm believer that businessmen should play a part in community projects.

John D. Williams has two jobs.
 He is the president of two companies.

In October 1958, after 29 years of service in various executive capacities, he was elected president of Lipe-Rollway Corp. and Rollway Bearing Co., Inc., both in Syracuse. N. Y.

Through the Ranks—An engineer, Mr. Williams rose to his present position through the ranks. Today he is one of the Syracuse area's most highly respected industrial and civic leaders.

He is a firm believer that every industrial leader, full time or otherwise, should be at least a part time community leader.

His Bywords—"Working in civic affairs—whether it be politics, art, education, charity, traffic control or downtown development—is important for two reasons," Mr. Williams says.

"First, it gives a businessman the opportunity to use his special talents and abilities in worthwhile community projects. In other words, he contributes to the community in a way that donations of money never can."

"Second, it gives a businessman the opportunity to sell the business point of view. The businessman in community action is the best possible demonstration of just what business, leadership really stands for and how it serves all of the community. Certainly a businessman



JOHN D. WILLIAMS: "Working in civic affairs is important."

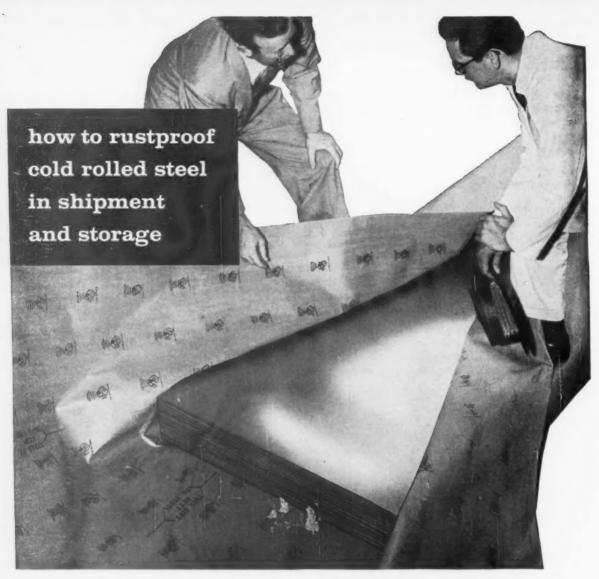
should be willing to spend some of his time to tell the management story. After all, others don't hesitate to take the time to tell theirs."

What He Does—And Mr. Williams is certainly a man who follows his own advice.

In addition to running both the parent firm, Lipe-Rollway, makers of heavy duty friction clutches for trucks and earth moving equipment, and the subsidiary, Rollway Bearing, precision roller bearing makers, he is highly active in community affairs.

For example, two years ago the now nationally known Syracuse Plan for Practical Politics was little more than an idea in the minds of a few local industrialists. Mr. Williams, as president of the Manufacturers' Assn. of Syracuse, supplied the leadership, organization and enthusiasm needed to make the plan successful. Today it is recognized as the businessman's blueprint for political action.

Do it Yourself—Mr. Williams believes that participation in civic affairs should be done on a "do it yourself basis." And he does it that way. In addition to being president of the Manufacturers' Assn., he is a trustee of an art museum, and the Syracuse Council of Churches, director of the Syracuse Boys Club, Community Chest, Chamber of Commerce and a long list of other civic agencies.



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yet highly flexible and easy to handle. The chemical rust inhibitor is compatible with oil and stays effective for long periods even when the humidity soars.

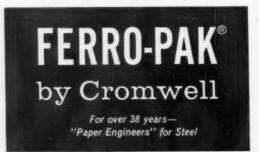
Whether you're a shipper or a buyer of steel, it will pay you to specify Ferro-Pak wrapping wherever rust is a problem. For an interesting idea brochure on many uses for Ferro-Pak, write Cromwell Paper Company, 180 N. Wabash Ave., Chicago 1, Illinois.



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Tight Money Can Hurt in '60

With borrowing demands heavy in the next twelve months, the credit squeeze should continue through 1960.

Inventory buildup, capital spending, and consumer debt will all be factors. Interest rates will probably rise.

• Don't expect any easing in tight money this year.

There will be too many demands on the money market during 1960 for any lessening in the credit pinch. As a result, interest rates will either hold firm—or rise—in the next twelve months.

Reasons Why—Three major demands for money will help make borrowing expensive this year. These are: The drive to rebuild inventories. Spending for new plants and equipment. And increased consumer credit. They could combine to curb the upswing.

Most of the inventory buildup will come in the first six or nine months. That's one of the reasons why the credit squeeze will be greatest in the first half. Some estimates place the first half stock buildup at an annual rate of \$8 billion.

More Business Spending — Also adding to the demand for credit is industry's drive to modernize or expand production. Some of the expansion is aimed at meeting the needs of a growing market. More is spurred by a drive to cut processing and distribution costs and to get competitive for the tougher selling in 1961 and 1962.

Part of this spending will be financed from earnings, tax depreciation allowances, or by freeing assets. But business borrowing will help tighten the money market.

So will rising consumer debt for the purchase of new homes, autos, and appliances. Home buying (already hurt by tighter credit) may be at a slower pace in '60. But in other areas, consumers should keep up the buying pace.

Interest Rate Pressures — All these demands for credit will put pressure on lending rates. Some economists predict the prime interest rate—the amount banks charge leading commercial borrowers—may jump another one-half pct to 5½ pct by mid-1960. Also the disrount rate—the rate the Federal Reserve charges member banks for

borrowing—may move to 4½ pct. Increases beyond these points are also possible.

Some Bright Spots—When prospects for 1960 are given, tight money is usually listed as one of the few dampening influences.

But it's questionable how much tight money will slow down the boom. There are even a few influences that could take some of the pressure off. The lower demand for mortgage money is one. Another is that the Federal budget will be in a more balanced position. During the first six months of the year the Treasury should have a seasonal cash surplus of around \$5 billion.

More Labor Headaches Coming

■ 1960 will be a big year for unionmanagement bargaining. Many important union contracts come up for negotiation in the next twelve months.

There are, of course, notable holdovers from incomplete 1959 negotiations—including the railroad industry. But, in addition, about half of all major collective bargaining agreements expire this year.

Key Sessions Due—The busiest bargaining period will probably be the second quarter. That's when the largest number of contracts are scheduled for negotiation.

Here are some of the major bargaining situations during '60: Aircraft (April-June), communications (May-August), men's clothing (May), electrical products (October), and possibly coal (contract subject to reopening on 60 days' notice).

More Than 120 Pacts — In all, more than 120 contracts covering 5000 or more workers each will expire this year.

Military Hardware Costs Keep Rising

Explaining the sharply-higher costs of today's military hardware is one of the toughest jobs facing military men.

Here are some examples of cost jumps: Polaris submarines cost \$100 million, compared with \$5 million in World War II. F-106 fighter planes cost \$3 million-plus, compared with \$80,000 in World War II. B58 bombers cost \$15 million each, compared with \$250,000 for B17s.



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FALCON: U. S. automakers are counting heavily on their compact cars to make 1960 a good sales year.

Automakers Predict Good Times

If things work out as they predict, 1960 will be the third biggest car making year ever.

Here, also, are some trends to keep an eye on this year.—By A. E. Fleming.

 Optimism is gushing through the automotive industry as 1960 gets underway. It is rampant in assembly plants and dealer showrooms.

People paid to know such things predict U. S. factories will produce at least 6.5 million cars and 1.2 million trucks in the next 12 months. This compares to 5.5 million cars and 1.1 million trucks in 1959. If predictions come true, 1960 will be the third best carmaking year in history behind 1955 (7.9 million) and 1950 (6.6 million).

Near the Top—The same people say new car sales will reach at least 7 million in 1960, including 500,000 imported models. This would challenge the record 7.1 million sales set in 1955.

Here are some other trends to watch in 1960:

Economy will continue to be a key word. Six cylinder engines will be installed in more new cars, and V-8s will decline. Sixes jumped to 28 pct of production in 1959 from 23 pct in 1958.

With the possible exception of power steering and power brakes, the trend will be away from power gadgets such as pushbutton windows and seats. Even automatic transmissions seem to have reached a peak, at least temporarily. They fell to 75 pct of car output in 1959 from 77 pct in 1958.

Lighter Trend—More aluminum will be used in 1960, especially in engines. Aluminum V-8s are on their way for some medium-compacts next fall. Some 1961 models

will have aluminum bumpers and mufflers.

More widespread acceptance of the alternator (which replaces the generator) by Chrysler Corp models—and perhaps other companies —is in store in the 1961 model year.

A sure bet: Arguments will fly hot and heavy throughout the year over the merits of annual model changes. GM, Ford and Chrysler will continue to say they are necessary. AM and S-P will say they are an expensive nuisance.

Why Things Look Good—There are several reasons for the bright sales outlook. Economists look to a rising gross national product and increased personal and corporate incomes. They say funds for financing consumer purchases of new cars should be ample. A peaceful labor climate within the auto industry appears assured since cur-

rent UAW contracts extend to mid-1961. Labor settlements by steel and railroad industries early in the year would contribute greatly toward a big automotive year.

Even if peace is reached in steel this month effects of the 116-day strike in 1959 will continue to influence auto making for the next several months. About 700,000 cars were carved from production schedules in October, November and December because there was not enough steel. General Motors and Chrysler Corp did the most carving.

Build 'Em Fast — In trying to make up the 700,000-unit loss, auto producers are scheduling 2.25 million cars in January, February and March. Several hundred thousand units of this total will be for beefing up anemic new car inventories. As 1960 began, only 500,000 new cars were in the nation's dealerships. This is 100,000 to 200,000 fewer than the inventory on Jan. 1 of recent years.

In grinding out a record 2.25 million cars in the first quarter,

assembly lines will be helping to build up an inventory that is expected to reach one million by midsummer, the major selling season.

Who Must Build—GM must do the most inventory building. Right now its inventory is about one-third normal. Its production schedules should be enormous in the next few months. As an indication, Chevrolet was turning out cars at an all-time record weekly high just before the Christmas holiday.

Another contributing factor toward a great automotive recovery in 1960 is that four million cars are headed for the scrap heap during the year.

Replacement Market — As cars are junked, they must be replaced. Waiting to help fill the void are the compact cars. "Compact" is a word the public will tire of this year. But compact, or economy, these cars were the big story of 1959 and they will continue to gain the most publicity in 1960.

The extraordinary acceptance of the Corvair, Falcon and Valiant by the public is surprising even the companies who make them.

A year ago, chief officers of the three largest auto companies were saying, "We don't think the public will pay the same price for a small car as they are paying for today's standard size car." The argument was reasonable.

Price Picture—The new, small cars are cheaper and easier to build than regular models. Yet they are commanding prices virtually equal to stripped down models of the Chevrolet, Ford and Plymouth.

In a few months, compact versions of medium price makes will be appearing—scaled down Mercurys, Buicks, Oldsmobiles, Pontiacs and Dodges. The medium-compacts will be slightly larger than the small-compacts. By the end of the year, perhaps one out of every three cars produced will be a compact.

U. S. carmakers seem to be denting the foreign share of the U. S. market. Foreign models were taking one to two pct less of U. S. new car sales than they had in the earlier stages of 1959.

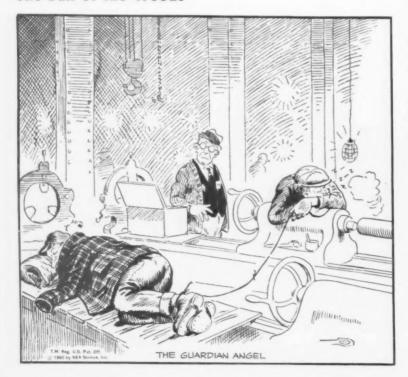
Still in Demand—Still it appears low-priced imports, such as Volkswagen and Renault, are selling as strongly as ever. Some foreign models will begin to offer automatic transmissions this year. This could be a stimulus to these models.

Long Shot: If foreign models continue to bite deeper into the U. S. market despite the Corvairs, Falcons and Valiants, GM, Ford and Chrysler could counter with Volkswagen-size models of their own.

The new compacts should create a heftier export market for U. S. auto makers. In 1959, exports slipped 15 pct below 1958. But U. S. producers are already increasing exports of parts to their overseas plants for assembly.

Big Demand — Station wagons will take a bigger share of auto production in the coming year. They moved from 15 pct of output in 1958 to 17 pct in 1959, and could move close to 20 pct this year.

The Bull of the Woods

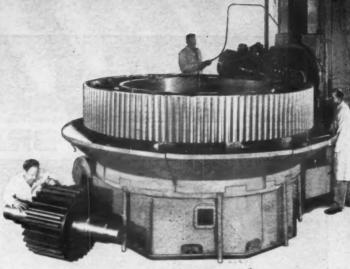


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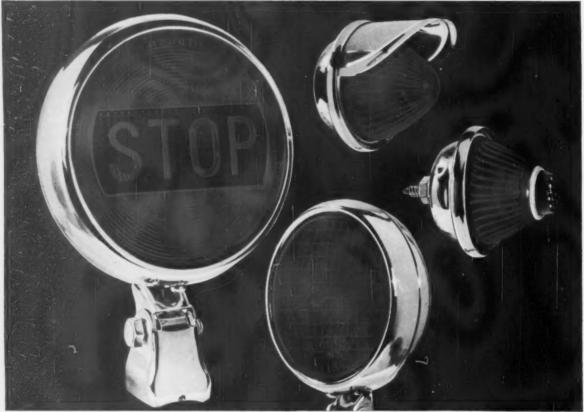
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This Is the Giveaway Year

Election-Minded Congress Will be Wooing Voters

Democrats see their first real chance in 8 years to recapture the White House.

Prediction: The race stacks up as Symington versus Nixon.— By G. H. Baker.

■ This is the year of "something for everybody" from Washington. An election-minded Congress will be handing out benefits.

Farmers, consumers, and foreign governments will gain most. U. S. businessmen will receive the least attention. Tax cuts, for example, won't come in 1960. More realistic depreciation rules on machinery and equipment are postponed.

Eye on Votes—1960 is a rootin', tootin' election year. Stakes are high. Prizes are rich. Voters will decide in November who'll control the executive branch of government for the next four years, as well as which party will call the legislative tunes in Congress.

Democrats are panting at their first big chance in 8 years to recapture control of the White House. They want control over both policymaking and the policy-executing segments of government. There is no lack of candidates.

Democratic Candidate—Best bet to win the nomination: Sen. Stuart Symington. A comparatively pale candidate, Symington lacks the fire and flash of his rivals, Senators Humphrey and Kennedy. But he holds an important trump: Backing of the party regulars. Also, he is the most acceptable to both the bigcity leaders, and to the South.

Republicans are running scared —a sign of vigor and health in

party ranks. Their chances of retaining control of the executive branch of government are good,

Nixon the Favorite — If Vice President Nixon doesn't stub his political toe in the next six months, something that's very unlikely, he'll win the presidential nomination easily.

Voters tend to retain the "ins" in good times. They seldom vote for the "outs" when payrolls are high and the nation is at peace. Hence, Mr. Nixon tends to be the favorite. Barring an upset, he is the man most likely to move into the White House in January, 1961.

On Capital Hill — Control of Congress is likely to remain with the Democrats. Republicans are faced with an all-but-impossible situation in trying to regain control of the Senate. Democrats are favored in all states where Senate

seats are at stake. Democrats now control, 65-35.

The House picture likewise favors the Democrats, although a spirited campaign by Mr. Nixon could topple Democratic rule. Democrats now control the House, 281-153, with three vacancies.

Problems to Watch—Here is a quick run-down on a key government problem of prime interest to business management in 1960—federal spending.

We'll spend more than we'll take in. Total government spending in the fiscal year starting July 1 shapes up at about \$80 billion, about \$1 billion more than taxes will produce. The Administration's official budget will show an apparent balance. But this fails to take into consideration some rises in spending for missiles and space exploration, which will not show up until well into 1960.

Don't Look for Tax Cuts

■ There'll be no tax cuts in 1960. A "tax truce" agreed to by both the White House and Congress bars both political parties from cutting any rates this year.

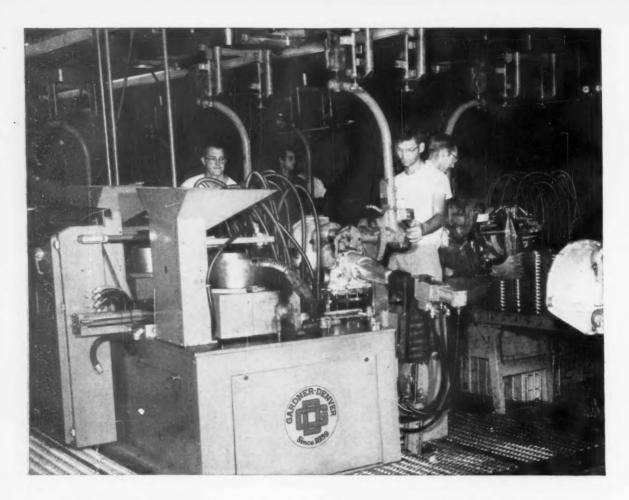
Time Needed—Chairman Mills, of the tax-writing House Ways and Means Committee, agrees that lower rates are long overdue. But he opposes any tinkering in 1960 because he says Congress needs more time to examine the complex federal tax structure to determine where reductions are needed most.

"It is certainly my thought that

our tax rates are much too high from the standpoint of incentives and economic growth," Mr. Mills declares.

Base to Be Broadened—The Mills plan is to gain new revenue by broadening the tax base (adding new taxes, possibly a national sales tax), permitting reductions in some established rates, such as those on corporations and on individuals.

Thus, a rewriting of the depreciation allowances for machinery and equipment is now postponed until 1961 at the earliest, along with all other needed revenue revision plans.



Ford speeds transmission production with special air-powered machines



IN INDUSTRY — SPEEDING THE PACE, the Gardner-Denver specialist is an integral part of the team. He works side by side with engineers and designers, helping to solve their problems. At Gardner-Denver there's no substitute for men—our 100-year philosophy of growth.

Three special pneumatic machines—designed by Gardner-Denver specifically for Ford Motor Company—step up production of automatic transmissions. These units automatically and simultaneously feed cap screws, hold and support the transmission, and set the screws on the oil pan assembly in a fraction of manual time.

This example is typical of the many tough problems that Gardner-Denver solves for production men. If you need a special multiple-spindle machine to speed assembly, Gardner-Denver specialists will work with your tool engineers to design and build one that exactly fits the job. Contact your Gardner-Denver representative for details.



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Farwest Will Use More Steel

Record Tonnage Will Be Consumed in '60

Western states should use a record 8 million tons of steel this year. Construction industry will be top user.

The area will also consume about 15 pct of the nation's aluminum.—By R. R. Kay.

■ The shift across America to the Farwest keeps up at rocket speed. Explosive population growth simply means that the region will make more and more goods for its own use.

For 1960, you can expect these developments:

Watch for the biggest steel-using year in Farwest history. The 13 western states will chew up 8 million tons. That's 10 pct more than the record in 1957. Of course, this prediction is based on labor peace in the steel industry.

More Home Tonnage—Increased steel capacity of the past few years will relieve some of the shortages the Farwest market has suffered.

The first six months will see a big scramble to replenish inventories. Demand for flat-rolled products, galvanized sheet, and tinplate will soar.

Construction consumes 50 pct of the steel in the Farwest. Some needed steels may remain tight during this whole year. And a few projects may have to be postponed. All indications point to the construction industry working at peak levels in 1960.

Gains for Aluminum — The 13 western states will gobble up 15 pct

of the national aluminum market this year. That's the best educated estimate.

Primary aluminum production in the Pacific Northwest may hit 575,-000 tons—10 pct over last year. In 1958, only 440,000 tons were turned out.

The region makes 30 pct of the nation's output. But the new aluminum plants are going up east of the Rockies.

Aircraft Outlook—Pentagon decisions keep changing the fortunes of West Coast aircraft companies.

But no matter how the chips fall, the major aircraft-missilemakers are sitting pretty with a \$6.8 billion backlog. Here's an up-to-the-minute rundown: military aircraft, \$2.30 billion; missiles, \$2.24 billion; and commercial aircraft, \$2.26 billion.

The industry's impact on the Farwest's economy is tremendous. Example: It pays out \$47 million every week to 360,000 workers.

However, during 1960 employment will take a sharp drop. Why? Missilemaking needs less production workers than planemaking.

Most missiles produced in 1960 will be custom-made jobs. And the largest number of them will still be research vehicles.

Headed for the West to Power Growth

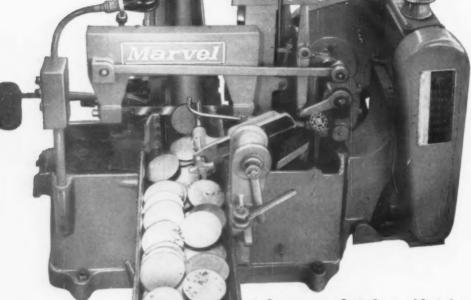


TURBINE COUPLINGS: Part of the 476 precision fitted, steel nuts and bolts which will go into seven turbines at Wenatchee, Wash. power project. Units are being fabricated by Allis Chalmers Mfg. Co.

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MARVEL Hack Saws are fine machine tools, with all the built-in accuracy this description implies. Designed to operate at higher speeds, with the heaviest feed pressures, they have almost unlimited power and stamina to stand up to the most severe service.

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Decisive Year for Machine Tools

U.S. Toolbuilders Face Challenges in '60

American toolmakers are confident the new year will be a good one.

The industry is pushing research and development, stressing service to beat imports.— By R. H. Eshelman.

■ What does the new year hold for the machine tool industry? Bigger challenges? Greater competition? Wider opportunities? Will the field share in the general prosperity from industry's stepped-up modernization and expansion plans?

Although better in some respects than the machine tool depression year of '58, last year saw estimated shipments of cutting machines about equal to the \$400 million of '58.

Well Above '58—In the eleven months ending Nov. 30, 1959, net new orders, however, totaled \$464.1 million. For the calendar year 1958 the comparable figure was a mere \$281 million. But in '56 the total ran to \$924 million. So current operations are scarcely more than 50 pct.

Forming Tools Advance — On the other hand, one bright spot has been the pickup of orders for presses and other metalforming equipment, especially in the last quarter. Net new orders through November of \$135.9 million are well above the \$100 figure for 1958.

Meanwhile E. W. Bliss Co. which grabbed a large chunk of orders in '59 (a reported \$5 million at Fisher Body) sees cause for optimism. Reflecting on this business, Company President Robert Potter notes outstanding advantages of the rolling bolster type press. With the arrangement, an entire line can be

shifted from one set of dies to another in a matter of minutes, eliminating many hours of lost production time for changing dies.

How to Battle Imports—Best bet for improving business in the coming year lies in improved machines and service, other industry sources agree. This is also the key to meeting increasingly severe foreign competition, according to National Machine Tool Builders Association.

Meanwhile, other firms also express optimism. Spokesmen for National Machinery Co., Tiffin, Ohio report surprising success against foreign competition. Reasons given: U. S. industry is now placing a high value on prompt service assistance (and a large, available inventory of replacement parts or spares).

More Research Coming—During '60, insiders look for smaller special combination operation machines to do better than conventional transfer and standard lines. Also, there's little doubt that American builders have the edge in numerically controlled machines. But to hold it they'll have to keep moving ahead. That means more emphasis and money poured into research.

More Emphasis on Machining Research



AUTOMATIC READOUT: Instrument panel (left) gives results of experimental honing setup at Micromatic Hone Corp., Detroit. This study is typical of the industry's new emphasis on research and development.

INDUSTRIAL BRIEFS

Minerals in 1958 — The Bureau of Mines' Minerals Yearbook has been published by the Dept. of the Interior. It contains a comprehensive three-volume record of activities and development industries during 1958. Copies can be obtained only from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

New Look at Morgan—The Morgan Engineering Co., Alliance, O., will embark on a \$1.8 million expansion and modernization program for 1960. Work will begin immediately on the construction of 72,000 sq ft of covered plant area; 55,200 sq ft of new yard storage area; and, the redesign and remodeling of 19,000 sq ft of existing plant installations.

Copperweld Spreads Out—Copperweld Steel Co. will expand manufacturing facilities at the Ohio Seamless Tube Div. in Shelby, O. During 1960, about \$3 million will be expended for new equipment and to revamp present facilities.

For World Market — Brakeshoe International, S. A., Swiss subsidiary of American Brake Shoe Co., has acquired industrial hydraulics firms in Belgium and England. The Belgian acquisition is Hydrobel, S. A.; the English firm is Deri (Engineers) Ltd. They will manufacture American Brake Shoe's line of Denison hydraulic pumps, motors, presses and controls in Europe.

Reynolds in Tubes — Reynolds Metals Co. has completed its drawn tubing facilities in a new addition to its Bellwood extrusion plant near Richmond, Va. The facility, costing in excess of \$500,000, now makes it possible to serve the entire Eastern U. S. with fast deliveries of high-quality drawn and mechanical finished tubing.

Land of the Incas — The first four-slide wire forming machine to be in operation in Peru has been delivered to Invasa, S. A. of Lima by The Baird Machine Co., Stratford, Conn. The machine is a Baird #2 four-slide. It is designed for the high production of articles made of commercial wire or ribbon metal.

Miniature Move—A new Western technical center and sales office was opened recently by Miniature Precision Bearings, Inc., world's largest manufacturer of miniature ball bearings. It is at 8621 S. Bellanca Ave., Los Angeles.

For British Sheets — Davy & United Engineering has a \$12 million order for the building of a 68-in. wide hot-strip mill at Richard Thomas & Baldwins' new steel mill n e a r Newport, Monmouthshire, England. Davy United will be collaborating in the project with its U. S. associate, United Engineering & Foundry, Pittsburgh.

Pennsalt at Valley Forge—Pennsalt Chemicals Corp. has purchased a 50-acre site in the King of Prussia park for construction of a technical



"You don't need a raise. You're too absent-minded to drive a car, too intelligent to want television, and too preoccupied to hear your wife complain." center. This park is located at the Valley Forge Interchange of the Pennsylvania Turnpike. The center will represent an investment of \$6 million.

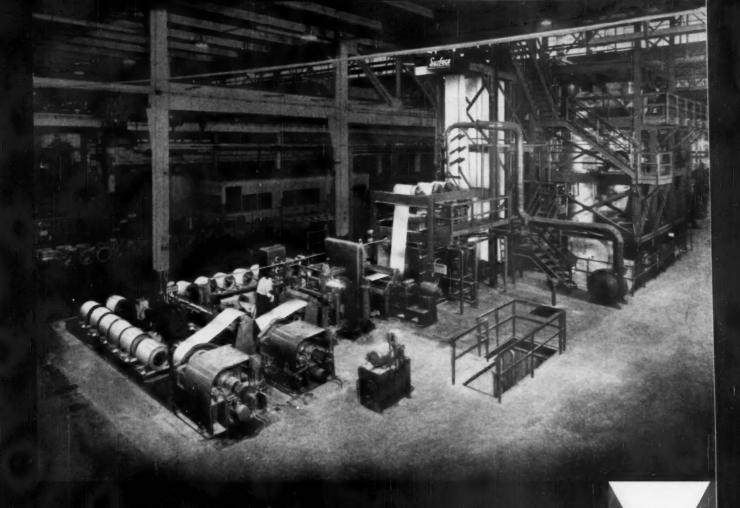
New Control System—A contract for a solid state, electronic combustion control system in the iron and steel industry has been awarded Hagan Chemicals & Controls, Inc., Pittsburgh. An advanced Hagan PowrMag system will be installed on a 2-zone slab heating furnace at the plant of an eastern steel producer in mid-1960.

Eastern Acquisition — Wheel-abrator Corp., Mishawaka, Ind., manufacturer of blast cleaning equipment, steel abrasives, and dust and fume control equipment, has acquired 80 pct of the controlling stock of Lord Chemical Corp., York, Pa. As a subsidiary, Lord Chemical will still operate in York, manufacturing its line of vibratory and barrel type finishing equipment.

On to the Coast — Directors of Bliss & Laughlin, Harvey, Ill., and Sierra Drawn Steel Co., Los Angeles, have approved a plan contemplating the acquisition of Sierra Drawn by Bliss & Laughlin. Both companies produce cold-finished steel bars. The acquisition of Sierra will add mills at Los Angeles and Seattle, Wash.

On Instruments—The Budd Co.'s Tatnall Measuring Systems Div. and Nuclear Systems Div. have been merged into a single entity, named Instruments Div. Main office of the division will be at Phoenixville, Pa. A second plant for testing machines is in operation at Royersford and a gamma ray encapsulation plant is located in North Philadelphia.

Chicago Headquarters—The Yale Materials Handling Div., The Yale & Towne Mfg. Co. has moved its industrial lift truck and Y-18 tractor shovel sales and service branch to Chicago. It will be located at 9335 Belmont Ave. in Franklin Park.



SURFACE POWER CONVECTION achieves uniform grain size at unprecedented speeds

This Surface line is designed to continuously heat brass strip at speeds up to 200 feet per minute.

But unprecedented process speed is not the only profit which can be credited to Surface Power Convection, which heats the strip. Equally important are uniform control of grain size from edge to edge, and improved surface quality.

The key to such high-speed high-quality production is the tremendous wind velocity achieved by Surface Power Convection. In this furnace, wind speeds reach 136 miles per hour—a velocity unheard-of in convection furnaces up to now.

And the best news about Surface Power Convection is that it can be applied to virtually any type of heat treating equipment you can think of-batch or continuous, direct or indirect fired, straight air or atmosphere.

You know how higher speeds and better quality could improve your profits. Surface Power Convection will give you both. Write for Bulletin SC-182.

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A.S.K. stands for American Shear Knife Company, the steel industry's leading authority on shear knife operation and production.

More than 90% of the nation's rolling mills call upon A.S.K. engineers (stationed in most key cities) to survey problems of knife life, cutting quality and operational costs. A.S.K. draws upon years of research in conjunction with top steel mill laboratories to select proper alloys and apply correct techniques in the heat treatment and precision machining of knives. It is this "custom" procedure that makes most A.S.K. knives last up to twice as long, give uniform precise cuts and reduce maintenance and replacement costs.

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E. M. deWindt, elected vice president and director, sales, Eaton Manufacturing Co.

Heli-Coil Corp.—John Fasano and D. B. Morgan, Jr., appointed vice presidents.

The Morgan Engineering Co.— E. H. Burke, named vice president, engineering.

Illinois Tool Works—S. S. Cathcart, elected vice president, corporate planning; J. D. Norman, named general manager, Fastex Div., Des Plaines, Ill.; H. B. Smith, Jr., named sales manager, Fastex Div.

Consolidated Systems Corp.—J.

J. McDonald and L. G. Criddle, elected vice presidents.

Alabama Metallurgical Corp.—
A. E. Petermann, named president.



D. E. Allen, elected executive vice president, Anaconda Wire & Cable Co.

Olin Mathieson Chemical Corp., Metals Div.—H. E. Blaine, appointed production control superintendent, Western Brass strip operations, East Alton, Ill., plant.

Udylite Corp.—T. N. Urquhart, appointed director, product evaluation; R. P. Hayes, promoted to chief estimator.

Vulcan Materials Co., Vulcan Detinning Div.—E. W. Young, named president; G. W. Goldrick, elected vice president, operations.

Beckman Instruments, Inc.—Dr. L. G. Cole, appointed vice president, research.

Jefferson Chemical Corp., Inc.— Dr. R. F. McLeary, elected vice president, research and development.

Manheim Mfg. & Belting Co.— V. K. Alexander, named vice president.

Van Norman Machine Co.—G.

P. Burns, elected vice president and sales manager, machine tools.

Niagara Machine & Tool Works—E. A. Munschauer, Jr., named director, research, and H. S. Cheyney, service manager.



W. H. Benton, Jr., elected vice president, manufacturing, Anaconda Wire & Cable Co.



E. C. Silver, promoted to director, purchases, Reynolds Metals Co.

Endevco Corp.—R. R. Bouche, appointed manager, Standards and Analysis Dept.

Master Power Corp.—W. S. Brucker, appointed engineering manager, Bedford, O.

Seneca Falls Machine Co.—R. A. Young, appointed general sales manager.

Pittsburgh Plate Glass Co.—P.
A. Ketchum, appointed vice president, glass sales, Merchandising
(Continued on P. 190)



J. L. Tindale, named vice president, marketing and sales, Anaconda Wire & Cable Co.

MATTHEWS PRODUCT PRINTERS



For line or friction drive continuous marking...or electronic control for spot printing.

MULTI-WHEEL PRINTERS

Hand rollers or in-line units for continuous overall sheet marking





PORTABLE

For Bar and Tube Marking, any diameter.



Complete line of inks and printing dies for every use.

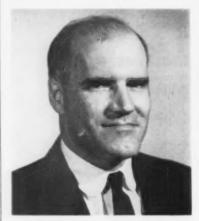
Write for further information

JAS. H. MATTHEWS & CO. 3962 FORBES AVENUE PITTSBURGH 13. PA.

(Continued from P. 189)

Div.; H. J. Mather, named vice president, industrial sales, Paint Div.

American - Standard, Industrial Div.—J. J. Rich, appointed purchasing agent for the division's Dearborn, Mich., plant.



E. H. Sangwine, named manager, process and engineering development, Metals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.

The Youngstown Sheet & Tube Co.—R. J. Carothers, appointed asst. superintendent, No. 1 blooming mill, Indiana Harbor Works.

The Carborundum Metals Co.— L. B. Hoskins, appointed manager, manufacturing, Akron, N. Y., and Parkersburg, W. Va., plants.



A. F. Garcia, appointed manager, reduction operations, Metals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.



W. J. Stephens, will become asst. vice president-sales, Bethlehem Steel Co.

Ford Div., Ford Motor Co.—M. S. McLaughlin, appointed general sales manager, and W. J. Cooper, named Ford's western regional sales manager at San Jose, Calif.

Climax Molybdenum Co., Div. of American Metal Climax, Inc.,—
J. V. Houston, Jr., appointed asst. manager, West Coast sales and development.

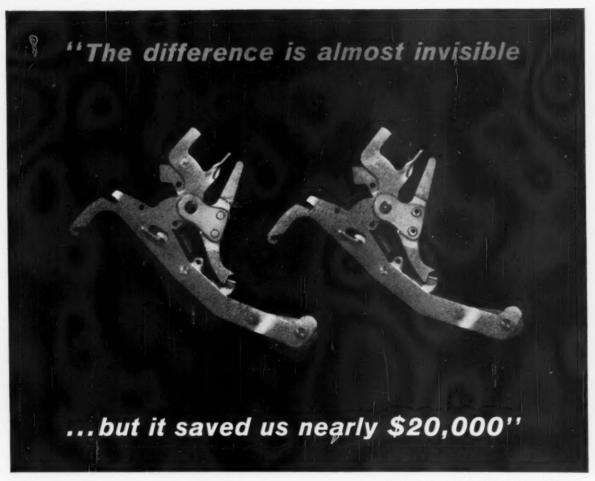


D. C. Roscoe, will become general manager, sales, Bethlehem Steel Co.

Chemetron Corp., National Cylinder Gas Div.—D. W. Gierke, named quality control manager.

Allied Chemical Corp., General Chemical Div.—V. A. Romito, appointed director, production.

(Continued on P. 195)



Royal McBee had been using solid rivets and a staking machine to put together an assembly for their Royal electric typewriter. Lots of hand operations, lots of chances for scrap-making fumbles. Still, production costs were satisfactory . . . until suddenly the production rate had to be almost doubled. Costs really jumped.

Their TRS man suggested dropping solid rivets for semi-tubular ones, automatically machine-fed and set, with a special TRS-designed loading fixture to fumble-proof the whole operation. Result: the increased number of perfect assemblies a day . . . with the same operating crew using standard TRS riveters already available at Royal McBee.

Let the TRS man look over your assemblies. You'll find that he has the viewpoint of a manufacturing engineer, and an unusual knack for making fastening simpler, faster, better.

making fastening simpler, faster, better.

Of course he will recommend TRS rivets. But he will give you sensible reasons why they are more reliable in essential qualities and uniformity. Superior Quality Control is one significant result of a five-year modernization of this pioneer company. Modernization of people, policies, production and service facilities. You'll like to do business with the new TRS... we'll make sure of it.

THE CHANGE THE TRS MAN MADE



Two operators assembied 2 solid rivets and 1 shouldered stud into countersunk holes of trip pawl, placed this on a tray, then placed carrier arm over stud. Third operator positioned bearing plate over rivets and stud, lifted the loose assembly from the tray and slid it under a staking machine to stake the 2 rivets.



The countersink is eliminated, in all three locations. On the special TRS sliding fixture, each operator assembles all components over 2 locating pins, with the studin place. The loaded fixture is then slid into riveting position, and the riveter is actuated by a foot lever to fasten the assembly with 2 semi-tubular rivets.

Don't Buy Riveting Machines until you learn how the TRS PAR process revolutionizes riveting

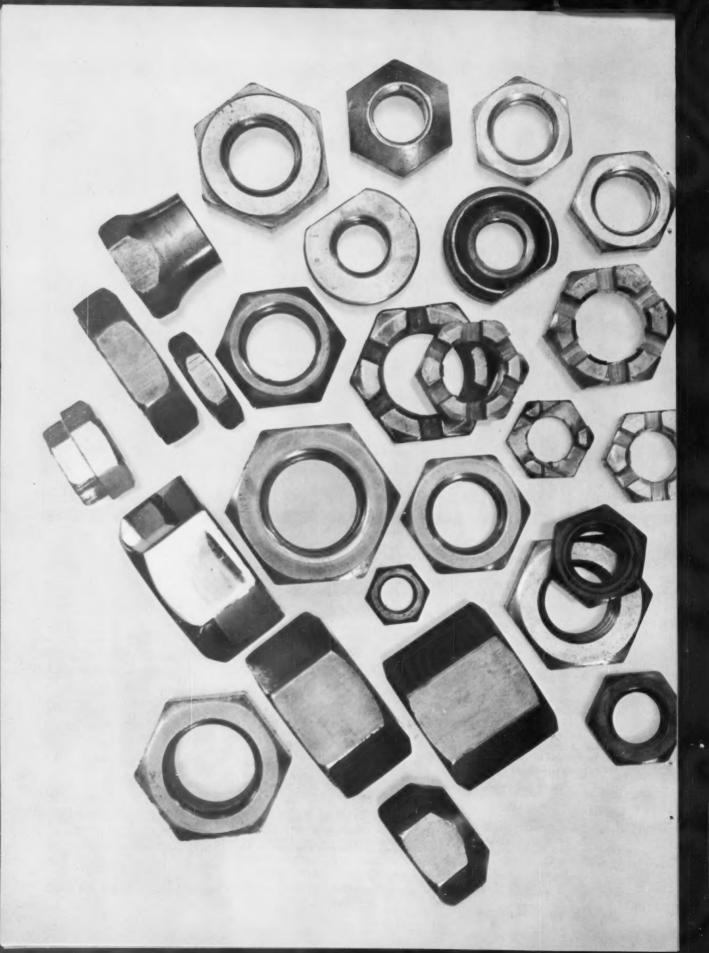
11 RS

TUBULAR RIVET & STUD COMPANY

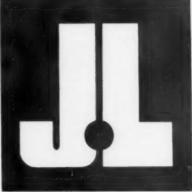
QUINCY 70, MASSACHUSETTS • TRS SALES OFFICES: Atlanta • Buffalo • Charlotte • Chicago Cleveland • Dallas • Detroit • Hartford • Indianapolis • Los Angeles • New York Philadelphia • Pittsfield • Quincy • St. Louis • Seattle. WAREHOUSE IN CHICAGO See "Yellow Pages" for phone numbers.

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We may not know your production equipment

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and, we do know all about scrapless nut quality hot rolled steel bars

and the techniques in metallurgy and in nut-forming that result in smoother production runs, fewer rejects and less waste. We know how to achieve the precise balance and uniformity in steel bars to provide you with the best combination of nut-forming properties. We can assure optimum metal flow characteristics and shear strength so that the steel will cold work easily and will not crack. We control steel to low rates of strain hardening so that large volumes of metal can be upset without annealing. Most important, we regard your nut-forming problems as our major challenge. . . .

and when given an opportunity to talk to you about your specific operation, we'll know how to develop exactly the right steel to meet your needs. We invite your inquiry. Please write . . .

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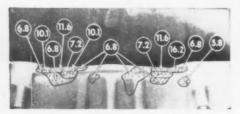




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MAGNATEST electronic testing for hardness, conductivity, alloy, proximity, and many more.

And still other methods and techniques, some completely new.

(Continued from P. 190)

Micromatic Hone Corp.—J. H. Greening, appointed director, engineering.

Sylvania Electric Products Inc., Chemical and Metallurgical Div.— A. M. Asherman, appointed manager, market research.

The Carborundum Co. — J. F. Claydon, elected vice president.

Kaiser Aluminum International

—F. R. Morrow, appointed Pacific
area operations manager, Oakland,
Calif.

Duff-Norton Co., Worm Gear Jack Div.—J. F. English, named district sales manager.

Pangborn Corp.—G. D. Robinson, named abrasive sales engineer, Chicago district.

Baldwin-Lima-Hamilton Corp., Industrial Equipment Div.—F. A. Fielder, named general manager.

The Anaconda Co., South American Div.—W. H. Swayne, appointed chief geologist.

General Dynamics Corp., Stromberg-Carlson's Electronics Div.— F. P. Norton, Jr., appointed Controller.

Lipe-Rollway Corp. — W. W. Sorn, appointed manager, manufacturing.

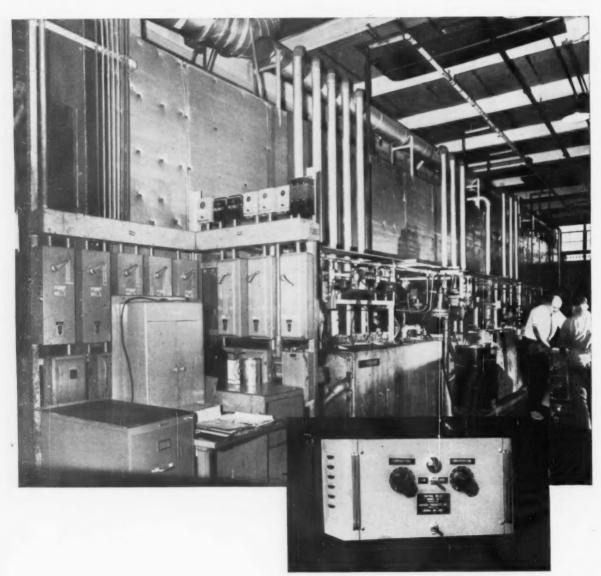
Federal Foundry Supply Div., Archer-Daniels-Midland Co. — V. M. Rowell, appointed manager, product development; D. R. Chester, manager, products and services; J. M. Sweeney, technical service manager.

Aeroquip Corp.—M. L. Jones, Jr., named manager, General Logistics Div., Burbank, Calif.; and Victor Emery, promoted to general sales manager, Industrial Div.

The Black & Decker Mfg. Co.— J. L. Bennett, appointed product development manager; R. H. Riley, Jr., appointed technical services manager and S. H. Kohler, appointed product development supervisor, Engineering Dept.



AMCHEM AUTOMATION...a new



Many industry leaders in iron, steel and aluminum fabrication are already employing AMCHEM AUTOMATION to provide unmatched product protection and gratifying production savings to these products—aluminum siding, appliances, venetian blinds, fluorescent lighting fixtures, aluminum sign blanks, steel office furniture, automotive trim, aluminum windows and doors. Give your product the same protection, the same kind of savings—with AMCHEM AUTOMATION!

concept in chemical conversion coatings assures you constant, uniform quality, actually saves you money!

AMCHEM AUTOMATION means new standards of protection for your metal products with actual black-and-white savings in time and money you can't afford to ignore!

AMCHEM AUTOMATION takes the human element out of your conversion coating processing—replaces it with 100 percent electronic line control that virtually assures you of constant, uniform quality. Rejects due to faulty bath control plunge to new lows. Product assembly moves faster through inspection as AMCHEM AUTOMATION guards quality round-the-clock!

AMCHEM AUTOMATION releases quality control personnel to other duties, builds employee morale and pride in their work. AMCHEM AUTOMATION watch dogs chemical replenishment-bath is never overloaded or under strength. You reap big savings in time, labor and chemical costs!

AMCHEM AUTOMATION can be yours right now for metal pre-treatment and protection on a variety of fabricated products. Just say the word, we'll have an Amchem Automation Coordinator-a specialist in electronic line control-fill you in on all the time, money and labor saving details!

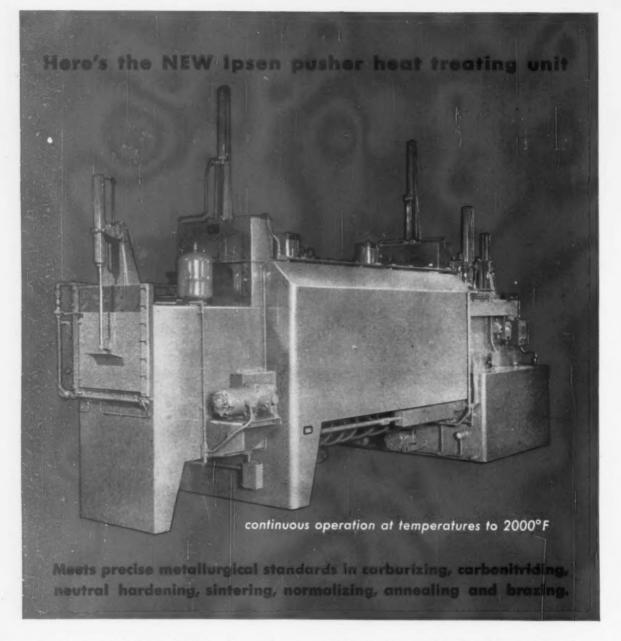


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First in automated chemical conversion processing

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- Each zone with individual 100% forced convection heating!
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 Ipsen "Flame-Busters" complete combustion within the heating portion of the tube.
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The IRON AGE

Survey Report 1960

Metalworking Industry Executives Forecast 1960 Outlook For-

Prices Sales Profits Backlogs Inventories

■ This special survey was made by The IRON AGE to bring you the opinions of top executives of the major metalworking industries listed below. They report to you on what they plan to do about prices this year . . . what they expect in the way of sales . . . how these will affect profits. You can check inventory and backlog conditions in

any of these industries, see how the men who run them feel about their prospects for 1960.

Answers to survey questionnaires received by The IRON AGE in mid-November of 1959 cover a cross section of the industries listed below. There are actually 19, because conveyors and cranes are combined with hoists and monorail systems because they are related.

Replies were received from executives of companies which employ 32.5 pct of all plant workers in these industries.

The next three pages of this section summarize the overall outlook for all 19 industries. The pages following report on individual industry groups.

For Overall Outlook and Reports by Industry See:

	SURVEY SUMMARY	P. 200		
P. 204	Gray Iron Foundries	P. 230	Nonferrous Foundries	P. 254
P. 208	Heat Treating Equipment	P. 234	Pumps and Compressors	P. 258
P. 212	Industrial Trucks	P. 238	Stampings	P. 264
P. 216	Instruments	P. 242	Steel Forgings	P. 268
P. 220	Machine Tools	P. 246	Steel Foundries	P. 272
P. 224	Malleable Iron Foundries	P. 250	Welding Equipment	P. 276
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Price Increases Will Be Small

Prices of metals and machinery will inch up again this year. None of the 19 industries surveyed expects an advance of more than 4 pct (brass mills, conveyor and hoist manufacturers). A few expect to hold the line on most products.

The average price increase of 2 pct would be about what took place last year. Machinery prices moved up a bit over 2 pct, nonferrous metals were up about 4 pct; iron and steel were advanced only about 1.3 pct.

Most estimates were made on the assumption that the steel impasse would not have any severe inflationary effects.

Consumer prices (all items) moved from 123.8 pct of the 1947-1949 level in December 1958 to 125.5 in October 1959. Wholesale

prices were almost constant during the year, because lower farm prices offset other increases.

In such fields as machine tools, fasteners, and in some instrument lines, the major price problem is foreign imports. In addition to imports, the brass mills are worried about fluctuations in copper prices which could lose them more business to other materials.

Sales Should Be Better

■ The 19 metalworking industries surveyed by The IRON AGE expect their 1960 aggregate sales to be up by about 9 pct. This is a weighted average based on value added by manufacture.

The groups vary widely in their appraisal of 1960, though all expect a better year than last. Machine tool builders are the most optimistic: On the average they look for a 14 pct sales increase

based on better general business, more automatic controls and the stimulus of the Machine Tool Exposition this fall.

Least optimistic are builders of construction machinery. Slashes in Federal highway program funds are to blame.

Planning for better than average increases are makers of heat treating and of welding equipment, plus the steel foundries. These groups look for 12 pct sales increases.

All in all, it should be a banner year if a 9 pct overall gain is chalked up. Durable goods manufacturers entered 1959 at a level (seasonally adjusted) some 152 pct over the 1947 - 1949 average. By June, just before the steel strike, it hit 172. It was down to 157 by the end of October but was climbing again as the year ended.

And Profits a Little Higher

If profits come up to expectations of the metalworking industry executives replying to this survey, 1960 will be a very fine year.

Again, machine tool builders are most optimistic; for the industry, the average profit increase expected is 13 pct. This group had an atrocious year in 1958, improved somewhat in 1959. Others predicting a much better year include makers of electrical controls, heat treating equipment and nonferrous founders -all looking for 10 to 11 pct better earnings.

The 7 pct increase figure at the right, like those for prices and sales, is a weighted average of all 19 industries.

For the first three quarters of 1959, metalworking profits were some 40 pct ahead of the comparable 1958 period. These are aftertax profits as reported by the Securities and Exchange Commission and include primary metals and automobiles. The latter are not included in this 19-industry survey.

For the same two periods, fabricated metals and machinery profits were up 43 pct.

In many lines, then, the outlook is for less rapid rises this year.

Some industries plan <u>price</u> boosts of about 4 pct
A few will hold the line

The average will be

Up

2
Pct

The <u>sales volume</u> picture varies from 14 pct in Machine Tools down to 5 pct in Construction Machinery

For all industries surveyed

The average should be

9

Pct

Tool Builders see <u>profits</u> going up 13 pct Stampers, Iron Founders, makers of Pumps and Compressors see 5 pct or less

The average figures to be

Up
7
Pct

Backlogs Up, Stocks Off

This will be a year of inventory buildup, with the first half marked by a rush to rebuild consumer steel supplies.

Backlogs, as expected, are a lot healthier than a year ago.

• The steel industry will have to make a lot more steel than its customers chew up this year. That is the significance of these inventory figures. To fill the pipelines and partially rebuild stocks should take about 70 million ingot tons of steel during the first half-which is just about all the industry can make.

Outstanding among industries with raw material supplies ahead of what they were a year ago are the foundries. On the opposite end of the see-saw are stampers and fastener makers, based almost entirely on steel.

Backlogs are almost all well ahead of what they were a year ago. There are only two exceptions: (1) Nonferrous foundries, which are about the same, and (2) makers of pumps and compressors, who figured to have about two weeks' less business on hand at the end of 1959 than they did a year ago.

Because of different process times, backlog size is not a measure of the relative outlook among different industries. The only basis is comparison with year-ago figures.

(Reprints of this or any other section of "Survey Report, 1960" may be had as long as supplies last).

Survey Replies on Backlogs, Inventories

INDUSTRY	Average Number of Days Backlog*			Raw Material Inventories*		
	End of 1958	End of 1959	Percent Change	Below End of 1958	About the Same	Above End 1958
Construction Machinery	58	68	+17 Pct	44 Pct	24 Pct	32 Pct
Conveyors, Cranes, and Hoists	154	200	+30 Pct	63 Pct	20 Pct	17 Pct
Copper and Brass Rolling	23	57	+104 Pct	59 Pct	33 Pet	8 Pct
Electric Motors	58	88	+52 Pct	23 Pct	5 Pct	72 Pct
Electric Industrial Controls	74	90	+22 Pct	37 Pct	15 Pct	48 Pct
Fasteners	33	42	+27 Pct	65 Pct	24 Pct	11 Pet
Gray Iron Foundries	31	34	+10 Pct	14 Pct	43 Pct	43 Pct
Heat Treating Equipment	78	104	+33 Pct	42 Pct	11 Pct	47 Pct
Industrial Trucks	69	104	+51 Pct	45 Pct	9 Pct	46 Pet
Instruments	60	65	+8 Pct	38 Pct	35 Pct	27 Pct
Machine Tools	60	87	+45 Pct	21 Pct	46 Pct	33 Pct
Malleable Iron Foundries	32	39	+18 Pct	5 Pct	58 Pct	37 Pet
Nonferrous Foundries	51	50	-2 Pct	2 Pct	45 Pct	53 Pet
Pumps and Compressors	75	65	-18 Pct	41 Pct	34 Pct	25 Pct
Stampings	60	87	+45 Pct	86 Pct	10 Pct	4 Pct
Steel Forgings	70	91	+30 Pct	78 Pct	13 Pct	9 Pet
Steel Foundries	49	68	+39 Pct	15 Pct	44 Pct	41 Pct
Welding Equipment	51	135	+165 Pct	43 Pct	20 Pct	37 Pct

*Replies by industry, weighted by plant size.

UNUSUAL CAREER OPPORTUNITIES FOR QUALIFIED SCIENTISTS AND ENGINEERS . . . WRITE AVCO/NASHVILLE TODAY.

Avco / Nashville

Avco/Nashville: specialists in lightweight structures

Specifications for tomorrow's high-speed aircraft and missiles call for engineering and materials of unsurpassed quality . . . and quality is built into every product of Avco's Nashville Division.

Making structures of aluminum, titanium and stainless steel—including Avcomb stainless steel honeycomb structures—is a Nashville Division specialty. The Convair 880 and 600 jet transports have major structural components built of Nashville aluminum honeycomb. The B-70 Valkyrie intercontinental bomber, designed for the Air Force by North American Aviation, will have large panels of stainless steel honeycomb in its fuselage.

Avco/Nashville's work in structures also includes airborne and ground radar antennae and large, heavy pedestals for ground radars. Nashville offers design, engineering and production facilities for a wide range of lightweight structures, including aluminum and stainless steel honeycomb.

At Nashville, each structures program is assigned its own task force of specialists backed up by the latest equipment for chemical milling, metal bonding and heat treating, including a brazing furnace large enough to accommodate stainless steel honeycomb panels up to 7 feet wide and 25 feet long.

For more information on Nashville's facilities and capabilities, write:
General Marketing Manager, Structures Nashville Division, Avco Corporation Nashville, Tennessee

Optimism in Construction Goods

But Industry Faces Tough Marketing Problems

Builders of construction and mining equipment see some sales problems ahead.

But, despite this, they are confident both sales and profits will increase in '60.

• Construction and mining equipment makers face many problems this year. But, as a group, they are confident about the sales outlook.

Manufacturers surveyed believe an average sales increase of 5 pct is due in 1960. With this will come an average increase of 4 pct in profits. Problems to Meet—The causes for concern among manufacturers are varied. They include: The slowdown of the federal highway program, steel shortages, more competition from imported equipment, and price-cutting.

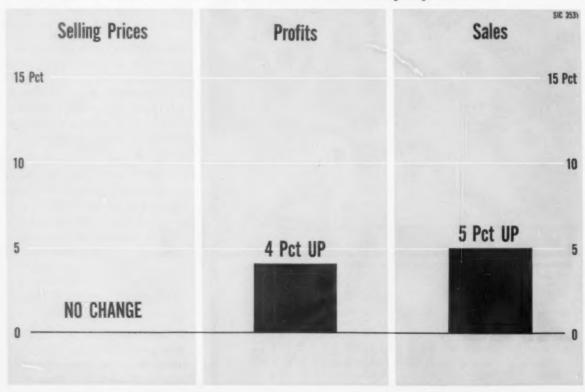
Makers of construction equipment and materials believe efforts to stretch out the U. S. Interstate Highway program hurt sales in late 1959. They expect the trend to carry over into this spring. The changes in federal and state highway spending will affect contractors' activity. This, in turn, will hamper buying of contractors' equipment.

However, a strong year in other construction spending, including housing, would help the industry. So would the revival of the coal industry.

Better Climate—The construction equipment industry can now produce and ship an estimated \$3 billion worth of products each year. During 1959 it operated at 60 pct of capacity, compared with 85 pct in 1956 and 68 pct in 1958.

This year, the U. S. Dept. of Commerce predicts, s h i p m e n t s should total \$2 billion. The industry can expect an increase in produc-

Better Profits in Construction Equipment



tion, shipments, and employment.

Steel Strike's Effects—The effects of the steel strike are also worrying construction machinery makers. During 1959, the strike brought cutbacks in construction work, pipeline projects, and related activity.

In addition, the strike hurt deliveries of equipment. These difficulties are expected to continue during the early months of '60.

With competition increasing, the industry is stressing marketing. Greater emphasis will be put on more direct contacts with customers.

New Products Planned — Additionally, the equipment makers are bringing out new or improved products. Almost two-thirds of those surveyed by The IRON AGE plan to introduce new products this year.

Prices appear stable for the next twelve months. The majority of manufacturers don't expect any price increases. On the contrary, the price competition of the last few years will probably continue.

Manufacturers' backlogs (weighted on plant employment) have increased about 17 pct.

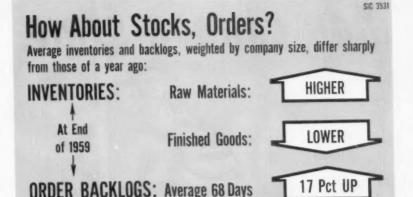
What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Federal highway program and revival of the coal industry." G. Barcamian, Asst. Treasurer, Marion Power Shovel Co., Marion, Ohio.

"Marketing problem. Cautious buying attitude by construction industry buyers." J. R. Steelman, President, **Koehring Co.**, Milwaukee, Wis.

"Steel shortage most likely will



slow down construction, but we expect profit margins to improve, and liquidation of slow moving inventory items, both of which have been severe handicaps in our business the past year or more." M. Holmgreen, President, Alamo Iron Works, San Antonio, Texas.

"Use of aluminum in truck mixers." W. A. Holden, President, Construction Machinery Co., Waterloo, Iowa.

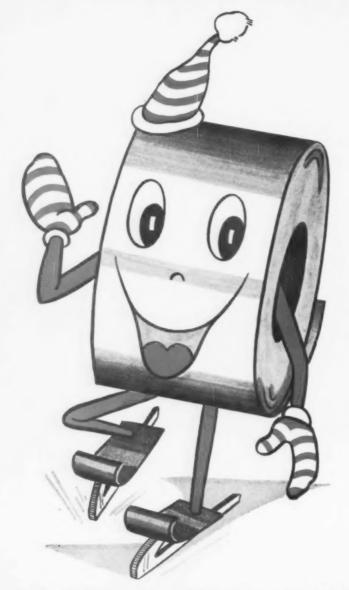
"Housing should be steady. Road programs about or above average, pipe lines are forecasting an increase. The rail strike, if it comes in February, could have a dampening effect on shipments of large equipment for a short time. All in all, 1960 should be a good year for construction machinery sales." H. Holdsworth, President, Parsons Co., Newton, Iowa.

Continued



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HIGH CARBON STRIP



PETERSON STEELS, INC.

THE 52100 HOUSE

UNION, NEW JERSEY · WETHERSFIELD, CONNECTICUT DETROIT, MICHIGAN · MELROSE PARK, ILLINOIS

Construction Machinery, continued

"Keen competitive salesmanship will have to be demonstrated to make sales—sell the product and talk price later." D. G. McIntyre, Vice President, Skagit Steel & Iron Works, Sedro Woolley, Washington.

"We are now working on several technical development projects which will no doubt have some effects on our industry. The marketing problem—well that is one for each individual to work out. In the construction machinery distributors fraternity the sales forces have become overly big-equipment minded. It seems that is changing now due to shrinking profits. This in turn will ease our marketing problems to quite an extent." E. R. Standfuss, President, Burch Corp., Crestline, Ohio.

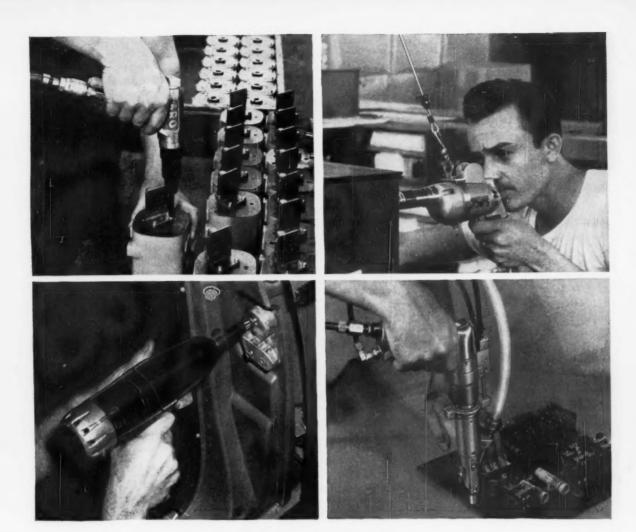
"Import of competitive equipment." G. P. Towle, President, Sturtevant Mill Co., Boston.

"New techniques involving revised designs and hydraulic powered equipment. New techniques in marketing will involve more direct contact with customers, branch offices and distributors." H. W. Botten, President, Owen Bucket Co., Cleveland.

"The partial wrecking of the U. S. Interstate Highway program through political bickering in Washington seriously affected fall business of all firms producing construction equipment and materials and this drag will carry over into Spring 1960. The steel strike has damaged our business also and its affect will be felt well into 1960." G. A. Cooper, Vice President, Tampo Mfg Co., San Antonio.

"Meeting competition with rising prices." D. V. Blair, Vice President, Holt Equipment, Inc., Independence, Oregon.

"More contracts on roads and dams will help us." J. C. Yaun, Yaun Mfg. Co., Baton Rouge, La.



Count on Continental and collect the savings you plan with power driving tools

Fastener faults can quickly foul up the best plans and the finest equipment for high-speed assembly. Defective screws that might "get by" for hand driving can be disastrous to assembly with hopper-feed machines and other power driving equipment.

To get all the savings you properly expect from your tooling investment, count on Continental HOLTITE quality standards. Tolerances are matched to the toughest demands for uniformity in every detail.

Special tests and trial runs under job conditions are made, as required, to assure trouble-free performance on the assembly line.

You can count on Continental, also, for cost-saving ideas in fastener selection. At your request, a Continental Assembly Specialist will make detailed recommendations.

Write or phone: Continental Screw Co., 450 Mt. Pleasant St., New Bedford, Mass.

CONTINENTAL

SCREW COMPANY, NEW BEDFORD, MASS.

HOLTITE FASTENERS

HY-PRO TOOL COMPANY . . . DIVISION RESEARCH ENG. & MFG., INC. SUBSIDIARY



HOLTITE PHILLIPS AND SLOTTED HEAD

WOOD • MACHINE • TAPPING THREAD CUTTING SCREWS HANGER AND STOVE BOLTS SEMS • NYLOK

HY-PRO PHILLIPS INSERT BITS AND HOLDERS

Handling Equipment: More Sales

Capital Spending Will Help Boost Market

Upswing in capital spending should improve sales and profits for makers of conveyors, cranes, and hoists.

Many manufacturers count on new products.

Industry's drive to cut costs and improve handling will help sales for conveyor, crane, and hoist makers this year.

The upswing in capital spending should also make 1960 a strong year for these material handling manufacturers.

Those surveyed by The IRON AGE show this optimism. More than 75 pct predict a sales increase averaging 8 pct. As a result, better earnings, averaging 6 pct, are expected.

Backlogs Climb - Backlogs of equipment makers increased with better sales in 1959. They rose 30 pct-going up from 154 days at the end of 1958 to 200 days as 1959 ended.

At the same time, stocks of finished goods declined. Over 60 pct of the manufacturers report inventories are below 1958 levels. Twenty-five pct list them as about equal with 1958. Only 12 pct say they are above '58 totals.

More New Products-Makers of conveyors, cranes, and hoists are not relying entirely on improved overall business for 1960 sales. They are also planning to expand product lines. Almost 40 pct say they will bring out new products this year.

With the trend to better handling, many manufacturers are turning out complete systems for moving raw materials and finished goods. Automated and programmed

systems are designed for better materials flow.

New developments are coming into use rapidly. Electronic controls offer automatic warehousing. Memory systems speed the sorting and moving of goods. Television is an important part of new handling sys-

More Competition - Manufacturers believe the sound road to profits depends on selling these systems. The industry is more competitive. Over-capacity is another problem. Selling conveyors or other handling equipment by the pound is no longer profitable.

Concern About Steel - Steel labor troubles are bothering the industry in two ways. Many capital spending plans have been delayed. This has held up many orders for equipment.

In addition, the lack of steel has hampered production of conveyors, cranes, and hoists. Raw materials stocks are below 1958 levels for many manufacturers. Sixty - three pct say inventories are smaller than in 1958. Twenty pct report them about the same. Only 17 pct have greater raw material stocks than in

What **Industry Executives** sav:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Our major problem is over-capacity, and this will continue to be

a problem for several years. The only solution is to sell systems which require a high degree of technical knowledge and automation equipment. The day of selling conveyors by the pound (virtually) and making a profit is over." O. A. Johnson, President, Gifford-Wood Co., Hudson, N. Y.

"1. The growth of automation.

"2. Settlement of the steel strike and the consequent release of many equipment orders now held up.

"3. Liberalized depreciation.

"4. The reduction of corporate taxes-which probably is too much to expect during the next calendar year." H. L. Donahower, President, Standard Conveyor Co., St. Paul,

"Coal must be upgraded. With the development of full seam mechanical mining, the cleaning and preparation of coal has become a highly technical problem. Also, recovery of coal fines is now feasible. Coal is not our only market as we build all types of bulk material handling equipment." H. R. Edelman, Jr., President, Heyl & Patterson, Inc., Pittsburgh, Pa.

"Increasing number of competitors as more people try to get in the other man's business.

"Increasing importance of competition development activity." R. I. Hicks, President, Lamson Corp., Syracuse 1, N. Y.

"The rapidly increasing trend to a greater degree of automotive and programmed or centrally controlled materials handling systems will cause more obsolesence of existing methods than ever before; and provide wide opportunities for ingenious designer and manufacturer. Also the spread of mechanical handling into more plants with fewer employees due to rising labor costs and further demands for increased efficiency is creating a wider market for conveying equipment." W. V. Casgrain, President, Mechanical Handling Systems, Inc., Detroit.

"Holding inflation in check is the most important problem we face." R. Logan, Chairman, Logan Co., Louisville.

"So called 'do-it-yourself' conveying components will continue faster development than engineered conveyor systems." J. B. Nordholt, President, Webster Mfg., Inc., Tiffin, Ohio.

"The material handling business is sensitive to general business conditions including availability of and cost of money. This may be somewhat of a detriment. But the cost saving opportunities which good material handling can bring should affect some of the reluctance to spend high cost money." E. L.

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES:

Raw Materials:

LOWER

At End
of 1959

Finished Goods:

ORDER BACKLOGS: Average 200 Days

30 Pct UP

Hummel, Treasurer, Rapids-Standard Co., Inc., Grand Rapids.

"The individual and total effect of the steel strike and following steel shortage." J. R. Hersey, Assistant Sales Manager, C. O. Bartlett & Snow Co., Cleveland, Ohio.

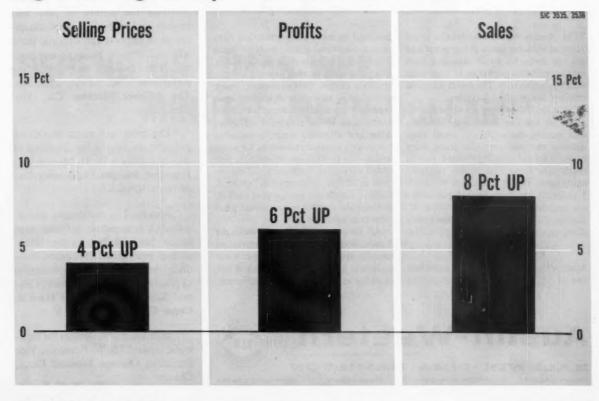
"Electronic controls-automatic

warehousing and memory systems for automatic sorting and conveyorizing." M. U. Coleman, President, Conveyor Systems, Inc., Chicago.

"More automation." M. V. Knapp, President, International Conveyor & Washer Corp., Detroit.

Continued

Big Backlogs Help '60 Sales Outlook







Coming out or going in ... A-W crane easily maneuvers Cal-Rex 7-yd. concrete mixer through low clearance doorway.

A-W crane saves valuable space!

"The Austin-Western hydraulic crane saves us valuable space in our plant and storage area. Its small size and high maneuverability permit us to keep aisle width down to 16 ft. The result is a more efficient use of plant facilities.

"We find the A-W so versatile we use it for loading, unloading, handling and storing materials . . . and even moving railroad cars. Its telescoping boom is an outstanding feature; lets us reach into areas inaccessible to other equipment. We've had the A-W about 5 years. It has been very dependable; no maintenance problems."—R. H. Knaup, Factory Manager, Chain Belt Company, Los Angeles, Calif.

5 models available

Austin-Western now offers a complete line of lift, carry and place equipment

designed to meet every materials handling application; quality-built for years of efficient, trouble-free performance. Available in five models from 3 to 10-ton capacity ranges. Self-propelled, truck or stationary mounting depending upon model. Most models feature full circle. continuous boom rotation; all-wheel drive and all-wheel steer; telescoping boom with manual extensions for extra length-up to 47 ft. on Model 410. For added versatility, such optional equipment as lift fork, load-carrying platform, magnet, clamshell, orange-peel bucket, and remote control maintenance platform is available.

Ask for proof of the ways in which an Austin-Western hydraulic crane can actually save time and money in your materials handling operations! Write us today or see your A-W distributor.

Conveyors, continued

"New system of weighing and loading raw materials are in excess of any known equipment presently on market." H. F. Adams, Sales Manager, Western Conveyor Co., Boise, Idaho.

"We believe that the modernization of existing plants will have the most influence on the material handling industry next year." C. L. Fell, Vice President, Marketing, American Monorail Co., Cleveland.

"While I don't foresee anything completely new in conveyorization in 1960, I definitely believe that there will be an increasing demand for automatic features in conveying equipment. Automation, or at least processes approaching it to a greater degree, will be more generally applied. The smaller manufacturer. too, must develop a continuous flow of his product, for he can no longer afford the manual handling and general confusion which is inherent in a non-mechanized plant." O. H. McCleary, President, Mathews Conveyor Co., Ellwood City, Pa.

"With the advent of new and improved dock facilities and the increase in imports and exports, there will undoubtedly be more emphasis on ship loading and unloading equipment." M. Lewis, President, The Alliance Machine Co., Alliance, Ohio.

"The most important marketing problem we face is the duration of the steel strike." W. H. Morgan, Jr., President, Morgan Engineering Co., Alliance, Ohio.

"Steel back in production will result in a tremendous business urge in all heavy industries for labor-saving equipment. Materials handling equipment, and automation applications." M. M. Botnick, General Sales Manager, Silent Hoist & Crane Co., Brooklyn, N. Y.

"More electronic devices for automatic control." S. W. Fountain, Vice President, Chicago Tramrail Corp., Chicago.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.



Power graders . Motor sweepers . Road rollers . Hydraulic cranes



Buffalo salvage firm says:

DEPEND ON LIMAS WHEN MINUTES MEAN DOLLARS!

"At the peak of the scrap market, when minutes mean dollars, our three Lima 34's have shipped as many as 6000 tons of scrap in one month!" says Nick Redino, of R & R Salvage Corp., Buffalo, N. Y. "Limas hold up well. They're dependable, economical machines to own and operate. Downtime is minimal. They work at full speed 80 hours or more each week, in all types of weather and under the most rugged operating conditions—in abrasive sand, dust, mud, slush and snow. In one 2½-month period the Limas salvaged 1500 tons of scrap from brick and mill scale.

"Front end interchangeability is an important Lima advantage. It's easy for us to make daily changes from bucket to magnet. We're sold on Limas!"

There's a Lima type and size for every job—cranes to 140 tons crawler mounted, 70 tons on rubber; shovels, ½ to 6 yd.; draglines variable. Learn how dependable Lima quality can add extra profit to your operations. Limas are available with gasoline, diesel or electric power; crawler, truck or wagon mounting. See your nearby Lima distributor today or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio,

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment



Improvements Will Boost Sales

Progress Made in Marketing and Manufacturing

Consensus is an eight pct boost in sales, and six pct increase in profits.

Rollers will make some dramatic improvements in market-· ing and manufacturing.

• Copper and brass rolling mills are conservative in their predictions for 1960. But they are far from conservative in their drive to improve business.

Respondents to The IRON AGE survey expect 1960 sales to be up about eight pct over 1959. But they believe that will be qualified by a four pct boost in prices. That will mean profits increased by only six pct during the new year.

Backlogs Gain - On the other hand, they wound up 1959 with an average of 57 days backlog, 104 pct more than the 23 days they had starting the year.

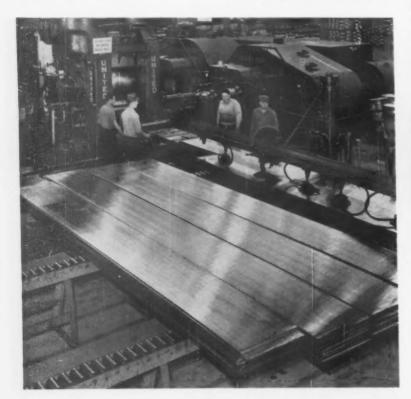
To hit their reasonable goals, the rollers will probably initiate more technical advances and dramatic market programs than in any single year in the last decade.

One major mill has already started a program requesting suggestions for new products and modification of current items. It reports the response, from the observations of their salesmen and directly from customers, has been better than expected.

All Hands-The key to the success of this program, believes the mill's chief executive officer, will be the handling and sorting of suggestions. All major departments, sales, manufacturing, research, etc., will get a chance to study the suggestions in detail and discuss them thoroughly, among themselves and on a company-wide basis.

Brass rollers have never had major quality problems. Traditionally, the largest part of their business has been high - quality, short - run specialty items. But now, more and more mills are trying to drum up long-run business so they can get into high-speed rolling and cut

More Optimism - If business picks up much beyond what rollers predict, they'll have to go into the market for materials in a big way. About 59 pct answering the survey said they are starting 1960 with smaller stocks of raw materials than they started 1959 with. Only eight pct have more.

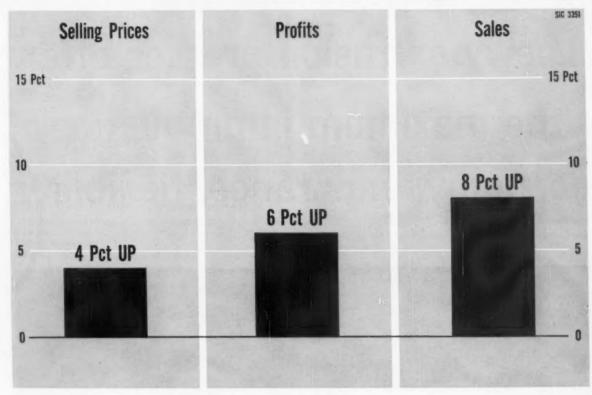


What **Industry Executives** say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The great influx of brass and copper imports at much lower prices. Also, exports of brass and copper products have been reduced due to higher prices and increased duty." C. H. Higgins, President, H & H Tube Mfg. Co., Detroit.

Better Business on Longer Backlogs



"The fluctuation in copper prices could act as a deterrent on our business. If copper gets over 35¢ our customers switch to aluminum or stainless steel." G. T. Hubbell, President, Seymour Mfg. Co., Seymour, Conn.

"In my opinion our biggest marketing problem will be the increased quantities of foreign products that are invading our markets at prices below our ability to compete." J. F. Murray, Vice President, Reading Tube Corp., New York.

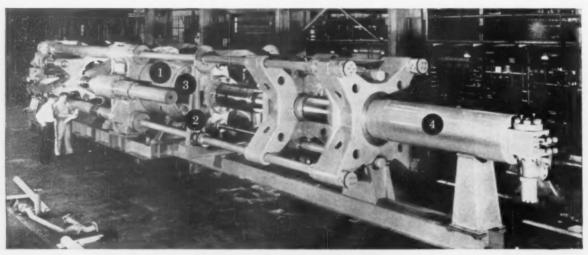
"Foreign competition will have the most important effect on our industry." E. R. Stafford, Jr., Comptroller, New England Brass Co., Taunton, Mass.

"In my opinion the greatest problem with which the brass mill industry will be confronted during the coming year will be a shortage of copper which will result from prolonged industry strikes. The instability of copper prices brought about by the erratic movement of supply and demand in the past has done much to foster the promotion of substitutes. In the past decade the brass mill industry has lost some markets, not because better products were found but because brass mill products were priced out of those markets. The copper and brass industry faces a great challenge in reversing this trend." P. M. Welpton, President, **Bridgeport** Rolling Mills, Bridgeport, Conn.

"The effect of foreign imports."
E. A. Oliphant, Small Tube Products Inc., Altoona, Pa.

How About Stocks, Orders? Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago: INVENTORIES: Raw Materials: LOWER At End of 1959 Finished Goods: NO CHANGE ORDER BACKLOGS: Average 57 Days

The precise reasons why Loewy extrusion presses offer the maximum in production, economy, endurance, flexibility



3000-ton-capacity water-hydraulic extrusion press with independent external piercing device

- 1. Inserted forged steel main cylinder
- Simultaneous setting of stop nuts by chain attachment mandrel arresting device
- 3. Prefill valve connector of patented design
- 4. Inserted forged steel piercer cylinder

Many of the outstanding features of Loewy extrusion presses are a result of anticipating the needs of our customers. Others, of course, stem from special designs made to satisfy the requirements of a specific client. The principle of changing basic designs to meet individual requests has resulted in presses that offer maximum production, economy, endurance and flexibility.

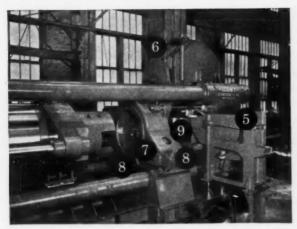
Loewy presses can handle all extrudible metals and alloys. They allow a combination of the variable operating conditions of pressure, speed, temperature and billet size needed for a perfect product. They are, moreover, built for the utmost economy of man-hours, cycle time, horse-power, maintenance and floor space.

In our designs, pushbutton automatic control has been developed to the highest degree of functional perfection.

Extrusion speed adjustment, billet, dummy and cleanout disc handling, die change and rotation—all can be fully mechanized.

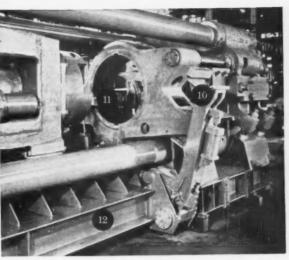
Rigid welded steel construction insures utmost precision in alignment and, where tubular products are concerned, highest concentricity. One-piece design of larger components prevents warping at high operating temperatures. Auxiliary movements are provided with independent pressure supply.

The pictorial story presented here sets forth some of the features of Loewy extrusion presses, all of which are the product of many years' study, research and development. And many other important advances are currently in the making. For detailed information, write Dept. A-1.



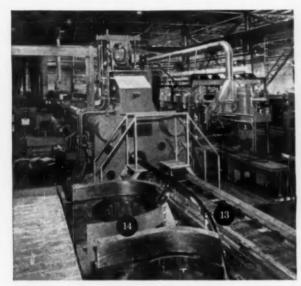
3000-ton-capacity self-contained oil-hydraulic extrusion press

- 5. Mechanized die-changing device permitting use of several dies in rotation without manual die changing and without interruption in main press cycle
- 6. Vertical sliding butt saw with oil-hydraulic feed control
- 7. Movable container holder of one-piece design that will not warp under influence of heat
- 8. Adjustment that insures concentric alignment
- 9. Lateral die slide, hydraulically operated, with two stations for die assembly and for removal of butt and shell



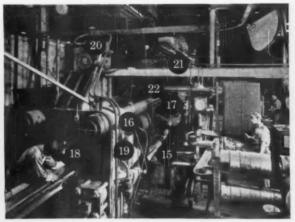
3000-ton-capacity water-hydraulic extrusion press with internal piercing device

- 10. Billet loader of robust pivot-arm design
- 11. Cleanout disc loading device mounted in front of container
- 12. Base frame—one-piece design of rigid welded construction that facilitates alignment of press assembly



3000-ton-capacity water-hydraulic extrusion press

- 13. Mechanization of run-out side of press for straight solid and tubular extrusion
- 14. Double coiler designed for the wire rod to be received near the outlet of the press



2200-ton self-contained oil-hydraulic extrusion press

- 15. Simple, easily adjustable billet loading device
- 16. Container holder designed to permit fast change of container, which can be removed on return press stroke
- 17. Ram speed indicator
- 18. Large platen hole for ease of access to emerging extrusions
- 19. Heavy-walled pipes rigidly supported to cut vibrations, leaks
- 20. Powerful, rigidly constructed shear
- 21. Large oil reservoir for minimum operating temperature
- 22. Full-size catwalk for ease of maintenance



BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering



Stable Prices Are Predicted

But Fractional-HP Motors May Be Boosted

Integral-horsepower unit sales will be higher; fractionals depend on housing, appliance outlook.

Some makers stress integration of motors with driven machine. New insulations are paying off.

■ Prices of integral-horsepower ac motors have been stable and should remain so for this year. Prices of dc motors, which went up last May, should also hold. (An inflationary steel wage settlement would, of course, erase all price predictions.)

A New Concept—You can expect your motor suppliers to stress integration of electric products with driven equipment—rather than just trying to sell motors. Mechanical and electrical engineers will cooperate in designing complete packages of motor and driven machine.

Because they are tied to capital spending, integral - horsepower motor sales are easier to predict. It's estimated that 1959 sales will prove to have been 30 pct ahead of those in '58. A 15 to 20 pct improvement for these motors this

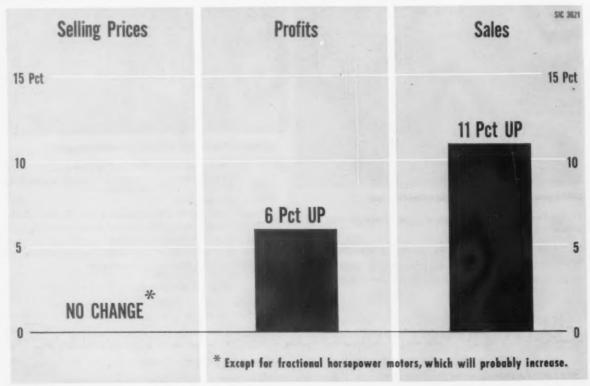
year is predicted.

Mill Motors Boom—Steel mill buying boomed dc motors, but sales tapered off in December. This may have been the usual year-end lag, because a lot of horsepower is still being negotiated.

There have been no production cuts because of steel shortages. And there probably will be none because these motor makers were able to build stocks before the strike.

About This Survey—Chart data on these pages are based on replies from companies that employ about

Bright Outlook for Industrial Sales



40 pct of all employees in electric motor manufacturing. Because of the varied product lines in the motor field, they are approximations which do not necessarily apply to any single type of motor.

Survey questionnaires were supplemented by personal interviews for the overall industry picture. This technique was used elsewhere in this survey report to refine market and technical forecasts.

New Designs—DC motors rated at from 1 to 200 hp in the General Electric, Reliance, and Westinghouse lines have recently been redesigned. The new motors are more compact power packages.

In ac motors, manufacturers are making wider use of epoxy type insulation for better protection of open motors. Such motors take more abuse and they last longer. The whole insulation field is changing rapidly because user resistance to higher temperatures is fading.

Imports now account for about 2 pct of sales of integral-horse-power ac motors. They create some

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: HIGHER

At End
of 1959 Finished Goods: NO CHANGE

ORDER BACKLOGS: Average 88 Days

52 Pct UP

problems, but foreign motors have not gained general acceptance here.

Large Motors Steady—Sales of motors of over 500 hp picked up during the past year and should hold that gain, surveys show. Most respondents said they'd hold the line on prices, though admittedly there has been some scattered price cutting in large motors.

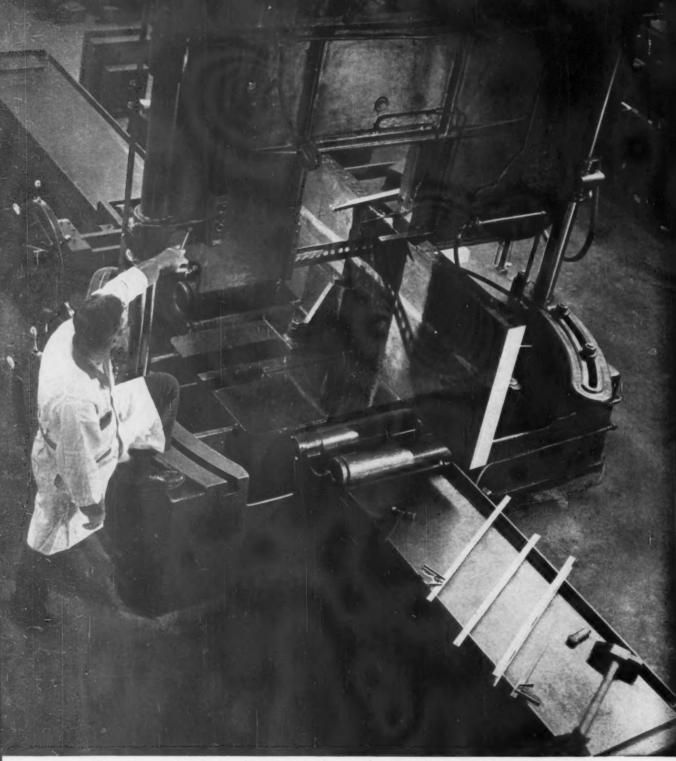
Fractional-HP Motors Climb—Industry executives expect a good first half. Sales began to roll in the spring of 1958 and continued on through 1959. Volume in 1959 may top the 1955 record.

Higher Prices—Prices, which are still at the 1949-1950 level, will probably go up this year. Fractional hp motor manufacturing costs have risen to above the 1949-1950 level.



THE IRON AGE, January 7, 1960

integrated CRUCIBLE steel service



The customer needed plastic mold steel cut to his specs as fast as he could get it. The Crucible warehouse confirmed his order, gave him immediate deliv-

ery because it had both the steel and the saw (big 24" \times 42" hacksaws which can slice a 40" block in 4-4½ hours).

maintains a variety of local facilities for handling customers' special requirements

"We regularly rely on the Crucible warehouse's equipment. Why, it would take us all day to cut steels they can cut in minutes. We've tried to do these cutting jobs ourselves and, frankly, we lose money nearly every time.'

This purchasing agent's words are probably typical because countless companies, all over the country, rely on the 31 local Crucible warehouses for handling their special needs. Unusual cutting of specialty steel grades and sizes is just an example. Or, if a warehouse can't handle extras, such as forging, grinding, machining, boring, polishing, etc. itself, it arranges to have them done conveniently and economically outside.

It's entirely possible that your plant has these facilities. Even so, it can pay you to find out what the local Crucible warehouse has to offer. As one mate-

rials buyer put it:

"We have a 'get to know the sup-pliers' policy. I've visited the Crucible warehouse personally and made a list of its equipment. Here it is - under 'Suppliers' Facilities.' Two weeks ago, when all our saws were tied up, we had the Crucible warehouse cut the steels. They did it immediately, so my list paid off.

All Crucible warehouses maintain stocks, services and facilities to serve you. If you'd like to know more about them, phone or visit the warehouse nearest you - any time. Its facilities and services are part of Crucible's integrated operation, from ore to mill and warehouse delivery to you. Crucible Steel Company of America, Dept. PA06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All **These Steels**



Customers' Master Files quickly give Inside Account Salesmen details on your receiving schedules and special requirements.



Inside Account Salesmen keep reference sources - give you fast breakdowns of analyses, or heat-treating, machining data.

TOOL STEELS-Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS-Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hat rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEEL - Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, anales

FREE MACHINING STEELS - Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS - bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS - Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

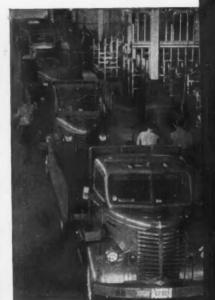
HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

- and many others



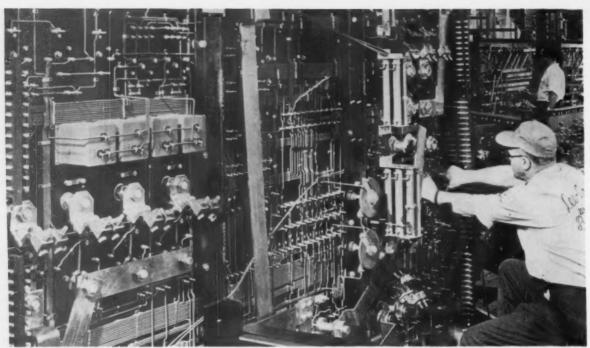
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Full stocks of specialty steels enable ware-housemen to ready your order for shipment overnight - or earlier.

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Torkel Korling Photo

Survey Report 1960 Electrical Industrial Controls

Sales Pickup Ahead for Controls

New Products Are Due, But Competition Will Be Stiff

More control units will feature transistors in place of 'electro-magnets.

They'll help boost sales and profits, controlmakers saywhen the steel issue is settled.

· Makers of electrical and electronic industrial controls are girding for a year of tough competition.

The industry is comparatively young and the market for controls is expanding at a rapid pace. But competition has grown right along with the expansion of markets. And more recently, foreign components have made their appearance, further stiffening the competitive elements of the business.

Buyers to Benefit-For the buyer

of controls, the competition has its advantages. Competition is always good for the buyer. It leads to improvements in existing products. And it acts as a spur to the development of new and better controls.

Some 88 pct of the manufacturers replying to the survey indicate they will bring out at least one new product this year.

Trend to Transistors-For this reason, many manufacturers believe there is an accelerated tendency toward electronic or "static" controls and away from electro-magnetic devices. Use of transistor and diodes in place of electro-magnets is also seen as improving performance by improving reliability under frequent operation for long periods.

Naturally, not all manufacturers look favorably on this trend. Producers of electro-magnetic components view it dimly. And they are also receiving added competition from foreign manufacturers.

Prospects and Problems-Nonetheless, industrial controls manufacturers are looking for a 10 pct increase in sales in the coming year. At the same time, they forecast a corresponding 10 pct increase in profits. And they look for only a 1 pct increase in prices.

By the end of 1959, backlogs had stretched out to 90 days, a 22 pct increase over the 74 days on the books at the end of 1958.

But in assessing the outlook for the coming year, the controls industry shows a preoccupation with problems arising from the steel strike.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Technical: Increased use of transistors and diodes in place of electro-magnets.

"Marketing problem: Rise of foreign imports. We believe that both of these will have a deleterious effect on our share of the components market." F. F. Rowell, Vice President, Guardian Electric Mfg. Co., Chicago.

"Capital investment plans of the steel industry after taking into acHow About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: HIGHER

At End
of 1959

ORDER BACKLOGS: Average 90 Days

22 Pct UP

count the strike loss." W. Peter, Jr., Vice President, Electric Controller & Mfg. Co., Cleveland.

"Availability of steel; credit; mortgage money." J. Manning, Plant Manager, Cutler - Hammer, Inc., Lincoln, Ill. plant.

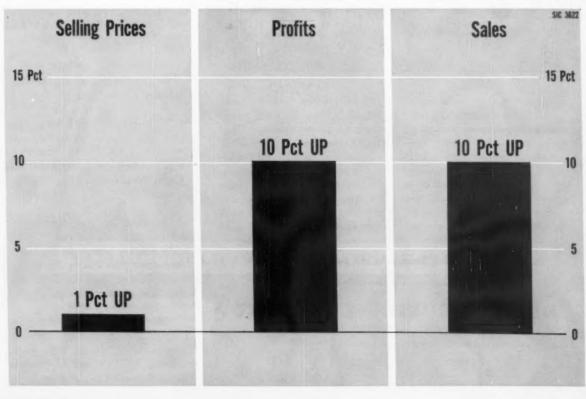
"Improvement in availability,

life, reliability, wattage, and price of transistors." T. Hopf, General Manager, **Dynamatic Corp.**, Kenosha, Wis.

"Lack of Engineering and Technical help." W. S. Rekne, Assistant Treasurer, Vickers Electric Div., St. Louis.

Continued

A Good Way to Start the Year





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H & S offers a complete line of Speed Reducers. Single, double and triple reduction types using Herringbone and Helical gears provide ratios from 2.31 to 1 up to 429 to 1; Worm gear reducers' ratios range from 3.56 to 1 up to 10,000 to 1. H & S has also become a leader in engineering and building special drives with space- and cost-saving features.

Industrial Gears, large or small, backed by over 70 years experience: Spur Gears up to 160" dia.; Spur Racks up to 12 ft. long; Helical Gears up to 125" dia.; Sykes Herringbone, up to 60"; Straight Bevel, up to 77"; Worm Gears up to 60" dia.; Sprockets, up to 48" dia. H & S Gears are available in Steel. Cast Iron, Ductile Iron, Bronze, Rawhide, Fibroil, or Bakelite.

Send for Speed Reducer Catalog No. 55, Gear Catalog No. 57.

THE HORSBURGH & SCOTT

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Controls, continued

"Our biggest problem is finding the man who buys or specifies electrical industrial controls for his plant. We are going to try hard to find how to get our message to him." J. Saint-Amour, President, Assembly Products, Inc. Chesterland, Ohio,

"We anticipate greater competition." R. M. Brumfield, President, Potter & Brumfield, Franklin, Ky.

"In general, the technical emphasis will be on better performance and smaller size. The better performance is related to reliability under frequent operation over long periods. Miniaturization is the order of the day in all electrical equipment because of the size problem introduced by more electrical equipment required for each installation.

"More significant will be the accelerated trend toward electronic (static) and away from electromagnetic devices for the more complicated types of control installations." F. H. Roby, Executive Vice President, Federal Pacific Electric Co., Newark, N. J.

"Settlement of the Steel Strike." A. F. Dormeyer, General Manager, Dormeyer Industries, Chicago.

"Giving a customer value in what they buy, when compared with values they can receive from countries outside U. S. A." H. C. Curtis, Curtis Development Mfg. Co., Milwaukee, Wis.

"New method of application and fabrication of new alloyed steel that older control cannot do, will help slow down price cutting due to stiff competitive selling." C. Schamanek, President, Robotron Corp., Detroit.

"Shortening the development, tooling and production time on new products." H. H. Rosenheim, General Sales Manager, International Register Co., Chicago.

Throughout the steelmaking industry, wherever steel is poured, there is an excellent chance that it is poured into

VALLEY
INGOT MOULDS

VALLEY MOULD AND IRON CORPORATION

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'60, A Good Year for Fasteners

But Threats From Imports Continues

The fastener industry looks for a good year in 1960. Profits and sales are expected to climb.

However, foreign competition and loss of aircraft work will cause some headaches.

 Profits, sales and prices all are expected to rise in the fastener industry during 1960.

According to estimates, profits should rise 9 pct over 1959. At the same time sales are expected to climb 7 pct and prices 3 pct.

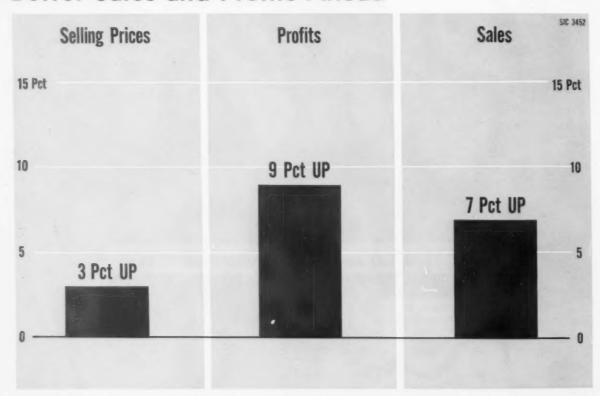
Good Year Ahead—For the industry, 1960 looks to be a good year. However, fastener makers will be keeping a sharp eye on foreign imports. Many feel this will affect business more than other factors this year. Last year, imported nuts, bolts and screws, selling cheaper than those manufactured domestically, seriously affected the industry's sales volume.

Manufacturers say that if the third quarter 1959 import level continues into this year, even without an increase, it will cause serious marketing problems.

More Problems—Others feel increased production of industrial adhesives may also cause marketing problems, especially in the threaded lines. Of some concern to the industry is the availability of materials because of the long steel strike. Some makers feel this will definitely hurt production during the early months, at least.

Another problem facing the industry is the transition by the government from manned aircraft to missiles. Since a great part of fastener sales go into these categories, companies will be losing much of

Better Sales and Profits Ahead



their aircraft business. They will have to meet new standards and get into the scramble for contracts.

Extended Delivery Dates—There should be a more concentrated effort on the part of manufacturers to build better distribution systems, according to some industry sentiment. Many feel that by doing this and maintaining better relations with dealers, sales can be increased even more.

The IRON AGE survey covers companies employing 44.5 of all production workers in the industry. Backlogs were up 27 pct at the end of the year over 1958. Backlogs are now approximately 42 days in comparison to 33 days a year ago. Of all the companies answering the survey, 43 pct will introduce new products this year.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The design and development of new fasteners." P. A. Miller, General Manager, Reliance Div., Eaton Mfg. Co., Massillon, Ohio.

"This year consumers of industrial products will attach a growing importance to the reliability factors of their suppliers. By 'reliability' I mean absolute dependability on (a) meeting delivery dates; (b) having all of the goods supplied meet specifications for size, finish, uniformity and other mechanical and physical characteristics; and (c) a realization that an end assembly is no better than the parts of which it is made. With a rising tempo of general business, the costs of dealing with the lowest prices, lowest quality sup-

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES: Raw Materials: LOWER

At End of 1959

ORDER BACKLOGS: Average 42 Days

27 Pct UP

plier will be higher than when dealing with first line organizations." H. T. Hallowell, Jr., President, Standard Pressed Steel Co., Jenkintown, Pa.

"The continued penetration of foreign product in our industry has and will remain the biggest problem in the marketing of our products. The shifting of sources on price alone has kept our marketing policies up in the air." D. O. Bielenberg, Pheoll Mfg Co., Chicago.

"Rapidly increasing volume of imported bolts and nuts at selling prices below our cost." M. A. Chambers, President, National Machine Products Co., Utica, Mich.

"The most serious marketing problem we face in our company, and in our industry, is the everincreasing shipments of imports of bolts, nuts, rivets, and machine screws (excluding wood screws) into this country. If the imports continue at the estimated third quarter 1959 rate, they would amount to approximately 120,000,000# per year. This is more than double the 1958 tonnage, almost four times the 1954 tonnage, and 30 times the 1951 tonnage. Even though current prices in our industry are about 6 pct below last year, imports are selling at 20 pct to 30 pct below our market. It is impossible to reduce our costs enough to meet this competition, and with the advent of the St. Lawrence Seaway, I expect an everincreasing flood of imported products." W. E. Ward, President, Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

"A tight material situation in the early months of 1960." R. E. Casner, Vice President, Townsend Co., New Brighton, Pa.

"Foreign Imports." R. H. Campbell, President, Camcar Products Co., Chicago.

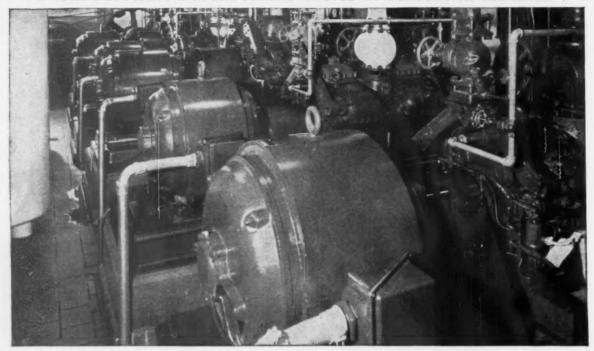
"The simplification of pricing methods and product identification should result in better and more intelligent merchandising. Otherwise, I believe our industry will be confronted with many of the same problems we have had for the past several years." M. H. Gordon, President, Sterling Bolt Co., Chicago.

"Imports and lack of raw material." W. T. Ylvisaker, President, Parker-Kalon Div., General American Transportation Corp., Clifton, N. J.

"Further acceptance of our counter-bore screw for machine tools, jigs and dies." D. Spicer, Vice Pres-

Continued on P. 229

WAGNER ELECTRIC MOTORS . . . THE CHOICE OF LEADERS IN INDUSTRY



End Voltage Drop and Line Disturbance Problems caused by starting BIG MOTORS...



Use Wagner Increment Motor-Starter Combinations

Increment starting is the easy, inexpensive way to limit the inrush of starting current in motors up to 500 horsepower. And, you do it best with Wagner Increment Motor-Starter Combinations . . . matched polyphase motors and magnetic increment starters.

They do the job efficiently by reducing current drawn from the line on each point of the starter. Line disturbances are reduced because current taken from the line is not broken during the starting period. Motors start sure and fast . . . reach full speed in a matter of seconds. They do the job economically, too, because Wagner combinations cost less than motors with primary resistance or auto-transformer type starters. Two more plusses: The compact, relatively lightweight starter is easy to connect, and maintenance is minimized. The motor requires only regular inspection, cleaning, and lubrication . . . the starter needs very little attention.

Wagner two-step motor and starter combinations are suitable for most applications. For installations where unusually low inrush of starting current is required, 3, 4, 5, or 6-step increment motor-starter combinations are available. All combinations fully meet the polyphase motor starting requirements of AEIC-EEI-NEMA. Their dependability and efficiency—their ability to get the job done—has been proved by more than 20 years of service in the field.

Why don't you investigate Wagner Increment Motor-Starter Combinations? It's possible they can save you money on your big jobs. Your Wagner Sales Engineer will help you select the combination that meets your requirements. Call him now, at the Wagner branch nearest you, or write us for Bulletins MU-128 and MU-195.

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THE IRON AGE, January 7, 1960

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HOLDRIDGE RADII-CUTTERS Turn Spherical Shapes with Accuracy and Economy

... also for turning Glass Laps and Contact Lenses



Models 3-S and 3-D (for small lathes)
Ball and socket shapes from 0" to 3" radius, sockets to depth equal to radius. By reversing yoke, sockets to 8" radius may be turned to depth of the radius minus 17/32" for "boss line" of cutter.

del 3-S (Standard) \$160.00 f.o.b. Los Angeles Model 3-D (Deluxe) \$231.10 f.o.b. Los Angeles

Models 4-S and 4-D (for medium lathes)
Ball and socket shapes from 0" to 4" radius, sockets to depth equal to radius. By reversing yoke, sockets to 12" radius with depth of radius minus 17/32".

Model 4-S (Standard) \$180.00 f.o.b. Los Angeles

Model 4-D (Deluxe) \$274.20 f.o.b. Los Angeles

Model 8-D (for medium and large lathes)
Ball and socket shapes from 0" to 8" radius, sockets to depth equal to
radius. By reversing yoke, sockets to 20" radius with depth of radius
minus 17/32".

Model 8-D (available in Deluxe only) \$491.20 f.o.b. Los Angeles

Standard model Radii-Cutters come in fitted hardwood carrying case with three $\frac{1}{2}$ " or $\frac{9}{6}$ " diameter carbide tool bits, tie down plate, Allen wrenches and instructions.

DeLuxo models have in addition such features and accessories as dial calibrated in October from a single machine and availing of time on repeat cuts; straight spindle objects for maximum accuracy and availing of time on repeat cuts; straight spindle yokes for cutting form rollers, pipe bending dies, etc., and tool bits and wrenches for those accessories.

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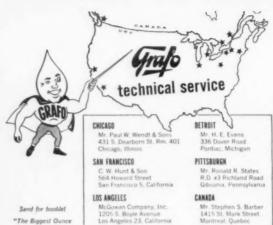
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"Improvement in riveting techniques." V. L. Bradford, President, Milford Rivet Machine Corp., Milford, Conn.

"Change over to hexagonal bolts and hexagonal nuts—foreign competition." H. E. Smith, Vice President, Vulcan Rivet & Bolt Corp., Birmingham, Ala.

"Foreign import and higher steel costs." O. G. Lobatz, Vice President, Revere Screw & Rivet Corp., Chicago, Ill.

"The development of, and marketing of subminiature and microminiature fasteners required by missle and electronic manufacturers."
R. F. Gibney, General Manager,
Rosan, Inc., Newport Beach, Calif.

"The impact of foreign imports will make the sale of higher priced home-produced goods progressively more difficult. This will be a growing problem which will become one of major importance to all American industry in a few years." J. Norman, President, Automatic Screw Machine Products Co., Chicago.



"If I can't think of anything to say at these meetings, I just make a speech."



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If slow-downs in assembly operations are jinxing your production schedules, you can be sure they aren't caused by "voodoo"! But what about the fasteners you are using? If they are not accurate and uniform, they can cause costly bottlenecks.

Fischer helps solve fastening problems by supplying precision turned brass and aluminum nuts... standards, specials, odd sizes or shapes and miniatures... to meet individual needs. And to assure reliable performance, all Fischer turned nuts are produced to closer tolerances than required by American Standard B18.2-1955 specifications. Fischer also specializes in dependable "on schedule" deliveries and competitive pricing. That's why FISCHER is your best source for precision nuts.



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Gray Iron Founders' Business Up

Technical Progress Aids Pickup

During 1959 gray iron founders were on the road to recovery from the recession.

This year should see even more improvement with increased sales and profits throughout the industry.

■ If estimates hold true, gray iron founders will have a second good year following the 1958 recession. Sales and profits are expected to increase and there is no danger of low inventories of raw materials hurting production.

Sales increase during 1960 is ex-

pected to be about 9 pct. Profits should rise about 4 pct. Price increases will be slight, about 3 pct.

More Ductile Iron—One factor cited by many founders in the optimistic outlook will be greater uses of ductile iron. This will aid in competition with steel and malleable castings producers.

During the past year, many advances were made in technological areas. This, too, will mean greater and more efficient production this year. Metallurgical progress has led to a continuance of advancement in the physical and mechanical properties of cast iron. Progress

will be more evident in 1960.

Some Worries—Some headaches during the year: Competition, both domestic and foreign; costs; labor; and price stabilization are all cited.

Gray iron founders will try to keep as much business as possible away from aluminum and other metals. The greater use of aluminum in replacing iron castings has already caused great concern in the industry and will continue to do so. Threat of imports is great and foundrymen will work to combat it.

Cooperation Wanted — Along labor lines, gray iron founders want unions to cooperate in increas-

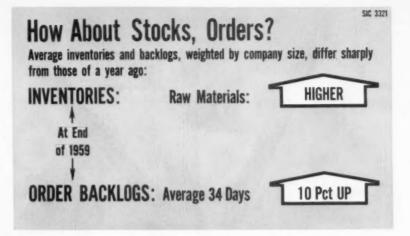




ing and maintaining efficiency in production. Rising costs, always a problem in the industry, may be combatted with the introduction of modern, cost-cutting equipment.

Many founders fear that reduced housing construction will cause setbacks in sales.

Promotion Will Help — The 1959-60 organization of a national promotion program of gray iron by the Gray Iron Founders Society is expected by some to help acquaint more users with the merits of their products and lead to greater sales.



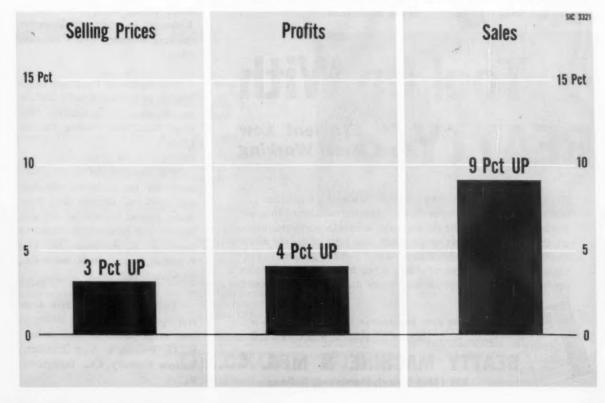
What Industry Executives say:

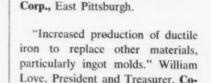
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?" "In this industry, remarkable progress has been made in the metallurgical field. Continuance of that advancement in the physical and mechanical properties of cast iron can be assured. Progress can also be expected in foundry techniques looking toward production of castings to more precise dimensions

and with better surface finishes. Product reliability will also be better." P. E. Rentschler, President, Hamilton Foundry, Inc., Hamilton, O.

"Stabilizing prices." K. Pottinger, Sales Manager, Component Prod-Continued

Grounds for Moderate Increase





lonial Foundry Co., Louisville, O.

ucts Dept., Westinghouse Electric

"The technical developments that will effect the industry are Co2 and shell molding, producing close tolerance castings. The problem will be getting castings within tolerance the engineers are looking for." T. Miller, President, Great Lakes Foundry & Machine Corp., Ludington, Mich.

"Ductile iron should replace a lot of steel." G. A. Kramer, Vice President, Advance Foundry Co., Dayton.

"Exploiting ductile iron." C. I. Capp, President, C. I. Capps Co., Jacksonville, Fla.

"The demand for more modern labor - saving equipment." R. J. Redmond, Secretary and Treasurer, Buckeye Foundry Co., Cincinnati, Ohio.

"Willingness of the union to cooperate in increasing and maintaining efficiency." C. B. Shanley, President, Semi-Steel Casting Co., St. Louis.

"For foundries to survive, they must seek out problems with their customers and uncover their prospects, instead of waiting for customers and prospects to come to them." C. K. Robinson, Jr., Vice President, Swayne Robinson & Co., Richmond, Ind.

"Tight money on housing. General shortage of spending money as long range effect of steel strike." R. G. Pinkerton, Vice President, Eastern Foundry Co., Boyertown, Pa.



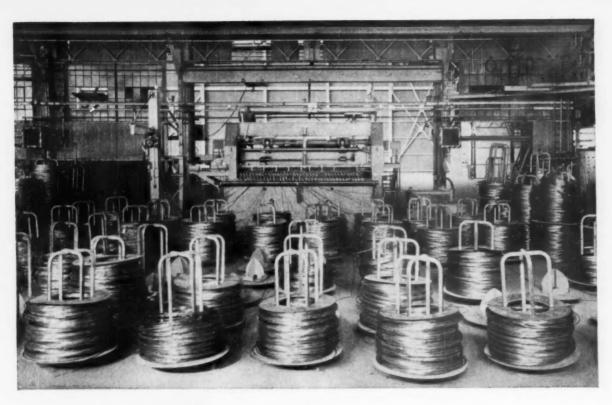
Tool Up With BEATTY For Efficient Low Cost Metal Working

Savings in metal working start with Beatty machines . . . job-engineered equipment that is especially designed to speed work flow and provide dependable, accurate performance — on the production line or on short run jobs or repair work. Beatty machines are built rugged and rigid to give more low-cost, maintenance-free production per man-hour; earn more profits per square foot of floor space and dollar investment.



WRITE FOR FREE DESCRIPTIVE LITERATURE on some of the BEATTY LINE of metal working equipment: Shears, Punches, Presses, Spacing Tables, Bulldozers, Stamping Trimmers

BEATTY MACHINE & MFG. CO.



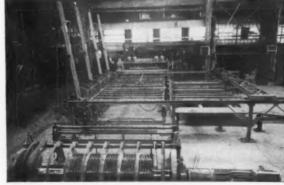
Let DSC COILS help cut your brite wire fabricating costs as they have done for our Portsmouth Division on Welded Wire Fabric

Look closely at the entry side of this giant Welded Wire Fabric machine. This one produces mesh in widths up to 13', used for reinforcing concrete in road, pipe and other construction. Fed by as many as 80 - 3,000 pound Brite Wire LPR's running simultaneously off as many reels, it produces rolls from 300' to 500' long, weighing up to about 6,000 pounds. The flat mats or sheets run up to 30' long.

In the photograph at the right, you see the delivery side of the welder, shear in the background, coiler in front and, in between, the fully automatic "flipper" and piler . . . the only one of its kind, we are told.

Our original purpose in developing continuous-length, long-production-run LPR's was to improve the efficiency of our own mesh operations. Compared with regular mill coils weighing about 300 pounds which we used previously, our 3,000 pound LPR's reduced downtime frequency by 90% and attendant coil-change and other costs proportionately.

PRACTICAL POINTERS on wireworking and complete information on DSC LPR's are available to you for the asking—call your nearest DSC Customer "Rep" office or write to Detroit Steel Corporation, General Sales Office. Box 4308, Detroit 9, Michigan.



LPR CONTINUOUS LENGTH BRIGHT WIRE COILS

LOW AND MEDIUM CARBON

.072"/.500" inc. (to about 4200 lbs.) .023"/.071" inc. (to about 1000 lbs.)

HIGH CARBON

.072"/.250" inc. (up to about 4200 lbs.) .023"/.071" inc. (up to about 1000 lbs.) COIL DIMENSIONS ON REQUEST

CUSTOMER "REP" OFFICES IN PRINCIPAL CITIES

Performance Proved

DETROIT STEEI

Flat Rolled and Wire Products

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Backlogs Are 33 Pct Higher

Equipment Builders Predict a Good Year

Despite phenomenal gain in '59, industry leaders see a 12 pct sales increase this year.

Expect to hold price rise to average of 2 pct. Steel shortage will not affect deliveries.

Builders of industrial heating equipment will begin this year with backlogs a third higher than they were a year ago. They expect to do about 12 pct more business than they did in 1959, with prices averaging about 2 pct above current levels.

These are the opinions of the top

executives in companies that employ more than 60 pct of the production workers in the heat treating equipment field. It suggests that '60 will be a very good year, with deliveries becoming slightly extended.

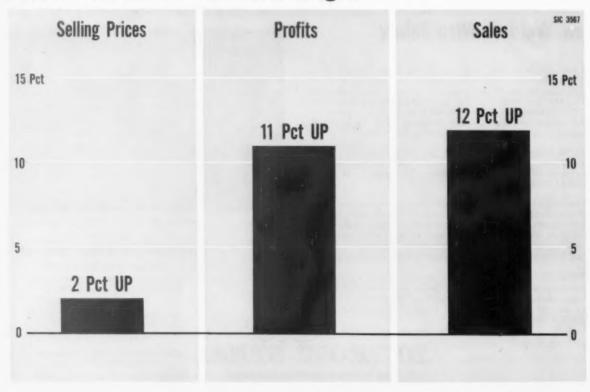
Orders are up-For the first 10 months of 1959, furnace and heating equipment orders soared some 129 pct above the comparable '58 period. In induction heating units, the gain was 139 pct. Shipments were not quite comparable because of delivery problems on many big units destined for steel plants.

The past year was marked by a record number of corporate changes: Mergers or acquisitions involved Hevi Duty Electric, Surface Combustion, and Swindell Dressler, each with outside firms. And Ajax Magnethermic Corp. was formed early in the year as a result of a merger.

No Shortages-With raw material inventories averaging about as they were a year ago, no shortages are expected.

Backlog data, unlike that on sales, prices and profits, is weighted. Weights are based on plant employment in respondent companies vs. employment in the heat treating industry as a whole.

Price Increases Will Be Slight



New Designs Coming—Two out of three manufacturers in this field will introduce at least one new product this year. The trend is to more specialized equipment that can be integrated with production.

There will be an increase in vacuum furnaces to anneal stainless steel, titanium and zirconium—plus wider use of vacuum on more conventional work.

Oxygen Booms—In the melting field, the volume leader will be new oxygen steelmaking vessels. Biggest vessels today make about 100 tons per heat; new ones may produce 200 to 300 tons. Capacity, which started '59 at 4 million tons, should be at least 9 million tons by the end of the year.

In specialties, there'll be a boom in vacuum melting of the refractory metals.

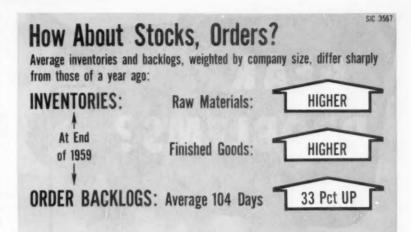
What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Continuous annealing—in vacuum—of stainless steel, zirconium and titanium. Also of copper strip from compacted copper powder." K. U. Wirtz, President, Electric Furnace Co., Salem, Ohio.

"Improvements in all lines of product—in particular 'Power convection' as applied to furnaces." H. M. Heyn, President, Surface Combustion Corp., Toledo.

"Demand is moving from the orthodox equipment to highly specialized, highly technical equipment. Our problem is to expand our technical staff to be able to properly service inquiries from new, highly technical industries." C. H. Stevenson, Vice President, Lindberg



Engineering Co., Chicago.

"High labor costs are again forcing the manufacturing industries to take further look at labor saving devices. This will of course give induction heating in the heat treat and forming field, and induction melting in the pressure casting field a further boost in 1960." J. A. Logan, President & Treasurer, Ajax Magnethermic Corp., Youngstown.

"The biggest marketing problem ahead is the lack of young ambitious imaginative salesmen who are not afraid to work in the field more than 8 hours a day. Too many salesmen are afflicted with swivelchair-itis.

"But the greatest lack is inability or unwillingness to sit down with a customer and work out the proper equipment for the job. This takes a lot of experience, know how, knowledge of one's product and imagination combined with a lot of hard work." C. B. Kentnor, Jr., President, W. S. Rockwell Co., Fairfield, Conn.

"Use of vacuum furnaces for 'garden variety' brazing as well as 'exhaust' jobs—plus expanding use of vacuum. Also, use of nitrogen as atmosphere." W. E. Sauter, General Manager, C. I. Hayes, Inc., Cranston, R. I.

"Our customers are demanding higher quality, higher operating temperatures, lower maintenance costs at lower prices. Continued product development is essential to stay ahead of competition. Also, increased sales coverage is required to contact potential customers that were not customers as short time ago as one year." C. R. Chambers, Manager, Vacuum Furnace Div., Concord, N. Y.

"General business conditions." N. Lirhart, President, Marietta Metal Products Co., Marietta, Ohio.

Continued





GEAR PERFORMANCE to match the ever-increasing power and speed of modern machines is a Fairfield specialty. This is possible because Fairfield has long held a position of leadership in utilizing the most advanced methods, equipment, and techniques for producing better gears. By keeping apace with modern engineering trends, Fairfield renders an invaluable service to many of the nation's leading machinery builders.

If you have a gear problem, check with Fairfield. Our engineers are well-qualified to give you expert recommendations. CALL OR WRITE.

SPUR GEARS — Straight, helical, and internal. Sizes from 16 pitch, 1½" dia., to 1½ pitch, 36" dia.

HERRINGBONE—(Fellows Type). Sizes from 11/2" to 15"

SPIRAL BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

STRAIGHT BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

HYPOID-Sizes from 11/2" to 28" dia.

ZEROL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.

WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS - Lengths to 72".

DIFFERENTIALS — 3,000 to 500,000 inch pounds capacity.

Note: All of the sizes above are approximate.



TRACTORS . HEAVY DUTY TRUCKS . AGRICULTURAL MACHINERY . POWER SHOVELS AND CRANES MINING MACHINES . ROAD GRADERS . BUSES . STREET SWEEPERS . INDUSTRIAL LIFT TRUCKS

Heat Treating, continued

"Continuous efforts to improve methods of production. It would help if taxes were lowered to make more funds available for capital investments." J. B. Crabtree, Vice President, American Gas Furnace Co., Elizabeth, N. J.

"Expansion of our field of endeavor should increase business. Price structures due to type of settlement made in steel strike can be a factor in sales." L. B. Rosseau, President, **Ajax Electric Co., Inc.,** Philadelphia.

"Settlement of steel strike—the new open coil annealing method is beginning to 'snowball'"! C. F. Olmstead, President, Lee Wilson Engineering Co., Cleveland.

"The obvious trend toward the purchase by industry of higher grade equipment and the introduction of a new line of progressive batch type carbo-nitriding-carburizing equipment coupled with other important improvements in our line will have profound beneficial influence in our 1960 sales." G. C. McCormick, President, Industrial Heating Equipment Co., Detroit.



"I thought getting you the latest machinery would help. But now you're doing everything wrong automatically."

SIMONDS gives you all



1. OIL HARDENING FLAT GROUND DIE STEEL Simonds quality-

Simonds quality-controlled tool steel . . . precision ground . . . ready-to-use . . . comes in 1001 stock sizes for 1001 uses: punches, dies, machine parts, small tools, etc. Spheroidize-annealed for best machinability. 18" and 36" lengths . . . flats and squares . . . individually packaged. A.I.S.I. or S.A.E. Type No. 01. Chemical Analysis: C .85-.95, Mn 1.00-1.25, Si .20-.40, Cr .40-.60, W .40-.60, V .10-.20.



2. AIR HARDENING FLAT GROUND DIE STEEL This 5% chrome,

spheroidize-annealed tool steel has exceptional wear-resistant qualities yet is easy to machine and heat treat. Ground to accurate dimensions . . . suitable for a multiplicity of uses . . . individually packaged in a wide range of stock sizes . . . flats and squares . . . standard 36" lengths (18" lengths also furnished, if desired). A.I.S.I. or S.A.E. Type No. A2. Chemical Analysis: C .95-1.05, Cr 5.00-5.50, Si .30-50, Mn .50.70, Mo .90-1.10, V .20-.30



3. and the NEW LOW CARBON FLAT GROUND STEEL

Here's a fine-grained, forging quality, silicon-killed steel that offers important savings on jigs, fixtures, patterns, stripper plates, punch pads, die plates, die-blocking shims . . . and parts that don't require heat treatment, or in some cases just case-hardening. This new line of low-cost steel rounds out the Simonds line of Flat Ground Steel, has equally fine finish, with excellent welding quality and machinability. Furnished in a wide range of flats from ½" to 1½" thick and ½" to 16" wide, and in squares from ¾" to 2½". All sizes come in standard, ready-to-use 24" lengths, individually packaged. Typical Chemical Analysis: C .18, Mn .50, Si .20, S .04, P .04

Factory Branches in Boston, Chicago, Shreveport, La., San Francisco and Portland, Oregon Canadian Factory in Montreal, Que, Simonds Divisions: Simonds Steel Mill, Lockpart, N. Y. Heller Tool Co., Newcomerstown, Ohio Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada GET FULL DETAILS
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ALL 3 TYPES
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For Fast Service from Complete Stocks Call your

Call your
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Industrial Supply
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SIMONDS SAW AND STEEL CO.

New Industrial Trucks Coming

Sales Increase of 8 Pct Expected in '60

Industrial truck makers are counting on the capital spending boom to help sales.

But they are also planning many new products to keep customers interested.

• Industrial truck makers are banking on the capital spending boom for increased sales this year. But the industry is going all out to sell its market. Almost 70 pct of the companies surveyed by The IRON AGE plan to introduce a new product this year.

This reflects the industry's drive to turn out equipment for better

handling of raw materials and finished products.

Sales, Optimism — As an industry, industrial truck makers are usually optimistic. This year, with its prospect of renewed boom, the manufacturers are confident of good sales.

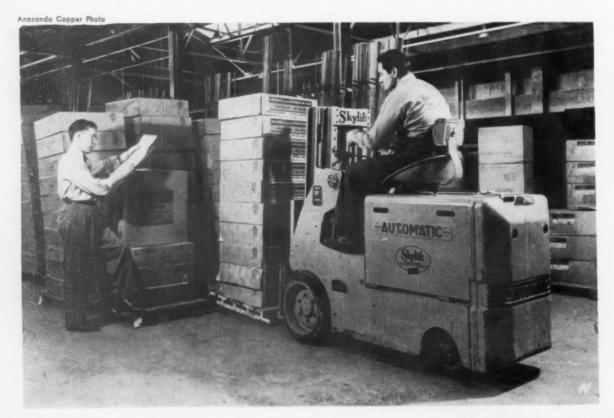
An average sales increase of 8 pct is predicted by those replying to The IRON AGE survey. This should bring a 6 pct increase in profits.

Price Prospects — Price uncertainty has increased because of the steel strike. But price rises of only 2 pct are forecast by industrial

truck makers. This approach is in line with the industry's view a year ago. At that time, less than half expected to raise prices. Many manufacturers hoped to hold the price line.

As for business on the books, the situation has improved a great deal. At the end of 1958 industrial truck makers had average backlogs of 69 days. This year backlogs have increased 51 pct to 104 days. Backlog figures are weighted by the plant employment of those replying to the survey. But figures on sales and profits are unweighted individual opinions.

Despite the steel strike, truck

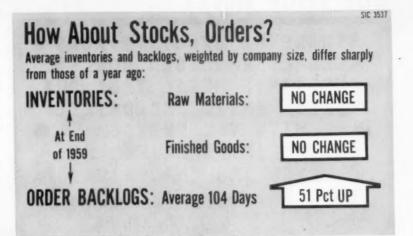


makers have bolstered inventories over 1958 levels. Among those surveyed, 46 pct had larger raw material stocks than in 1958. About 9 pct had inventories equal to 1958. Finished goods stocks were not increased. Almost half of those responding had stocks below 1958 levels.

Import Threat — Together with other industries, truck makers are concerned about imports. Foreign competition has been increasing.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"



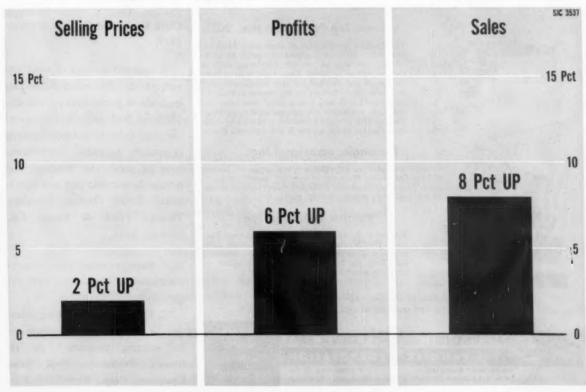
"The needs of automation . . ."
N. A. Price, Executive Vice President, Colson Corp., Elyria, Ohio.

"New developments in warehousing methods — both static and automatic — narrow-aisle truck attachment." E. A. Skae, President, Equipment Manufacturing, Inc., Detroit.

"The thing that would help us most is a reliable source of sheet and bar steel free of strike interruption and company maneuvering."

Continued

Capital Spending Will Provide the Push



CUT YOUR METAL TAG COSTS...

SINGLE OR QUANTITY RUNS
CLEARLY EMBOSSED.008 GA.
DUPLICATE METAL TAGS ARE
EASY. FAST. ECONOMICAL
BITH THE PANNIER
SIMPLIFIED METHOD OF
METAL TAG EMBOSSING
THE PANNIER CORPORATION
PITTSBURGH. PA.

... Get clearer, sharper impressions, with PANNIER EMBOSSING MACHINES

Whether you use embossed metal tags in large, production quantities—or just a few, occasional tags—Pannier simplified embossing equipment is engineered to provide your metal tags at the lowest possible cost, greatest safety and easiest readability. Inexperienced help can operate any of the machines, large or small.

One to four tags at a time (model 344)

Model 344 Pannier Embossing Machine has two uses. It can emboss up to 4 duplicate tags, like that pictured above, in sizes up to 3" x 5½" or longer, at one operation (one letter at a time).

This same machine provides the low cost, matched male and female embossing matrices (shown at left) for use with Model 207. Paired, these two machines provide complete equipment for volume tag production.

Volume Tag Production (No. 207)

The Pannier Master Marker Embossing Machine, Model No. 207-H-6 automatically produces up to 60 duplicate tags per minute, employing coils of Pannier Safety Tag stock. These tags, in strip form, are nicked and notched for easy detachment from the coiled strip. Embossing impression is made by inexpensive male and female metal matrices—that cost only a fraction of type-and-matrix methods. The machine operates by start-stop pushbutton control. Fingers never approach the embossing area.

For single, occasional tags

Pannier engineering provides a wide range of Master Marker Embossing Machines to suit any quantity requirement. This small hand-held Embosser makes individual tags on half-inch strip metals or vinyl plastic.

Pannier Embossed Tags

You can order all your tag requirements from Pannier. They're embossed for you on these same machines. Tags are low cost and delivery service is fast. They can be made to your specifications, or write for standards and price list.

Write for literature or Pannier engineering service, specifying style and quantity of tags you require.



PANNIER
MASTER
MARKERS
FOR QUALITY

Industrial Trucks, continued

W. J. Webster, Works Manager, Searles Mfg. Co., Cicero, Ill.

"It is our opinion that the results of our research and engineering in the development of the new fork lift truck will reflect most favorably in the planning, building and redesigning of factories, warehouses and complete material handling systems for many years in the future." C. E. Smith, President, Towmotor Corp., Cleveland.

"We feel the industrial truck industry in general has matured to the point that the greatest progress in 1960 will be in the nature of refinement, rather than in drastic engineering change. For instance, there are great areas for improvement in respect to customer services. Even though we forecast that emphasis will be shifted to the areas mentioned-we feel that in view of the current and projected upswing in spending for capital equipmentour industry will continue to be a dynamic and a growing one." B. E. Phillips, General Sales Manager, Clark Equipment Co., Battle Creek, Mich.

"Continued analysis of users and makers of the material-handling methods in manufacturing and distribution will influence increased use of all types of material-handling equipment, to reduce burdensome costs of processing, handling and storage in both old and new operations." J. F. Thomas, President, Thomas Truck & Caster Co., Keokuk, Iowa.

"1. Foreign competition (Imports are becoming very serious with our industry).

"2. Educating our sales organization to recognize new applications for existing products." A. H. Klumb, President, West Bend Equipment Corp., West Bend, Wis.



Now-a new symbol for top quality aluminum!

This striking design is Aluminium Limited's new corporate symbol, and your assurance of the finest in aluminum ingot products, service and research.

Like the company it identifies, the new mark stands for primary aluminum with quality assured by Aluminium's world-wide resources: unequalled bauxite and alumina facilities; massive hydro-electric plants and smelters; the latest in research facilities in Canada, England and Switzerland.

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In the U.S.—Aluminium Limited Sales, Inc., 630 Fifth Avenue, New York 20, N.Y. CLEVELAND - CHICAGO - LOS ANGELES - DETROIT - ATLANTA - ST. LOUIS
Additional distribution (Alcan Foundry Alloys): Apex Smelting Co., Chicago, Cleveland, Los Angeles. Charles Batchelder Co., Inc., Botsford, Conn. Aluminum Inc., Fort Lauderdale, Fla.

Good Year Due for Instruments

Spending for New Equipment Will Boost Sales

Makers of industrial instruments and controls predict an 8 pct increase in sales.

Prices should be reasonably stable. But some scattered increases are likely.

• Increased capital spending this year should boost sales of measuring and control instruments.

That's the opinion of manufacturers surveyed by the IRON AGE. As a group, they predict a sales increase averaging 8 pct in 1960. But even this estimate may be conservative.

Better Than Expected—In last year's survey, the instrument makers forecast a 14 pct increase in sales. However, during 1959, the industry far outpaced industrial activity as a whole. While industrial output moved up about 6 pct in the first 10 months, instrument sales literally soared. These gains were made despite the steel strike, which hurt the instrument market in the second half of the year.

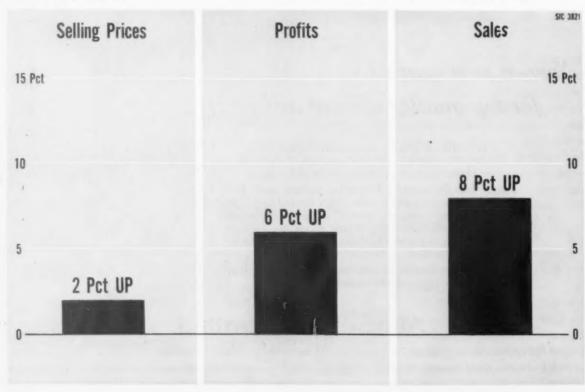
Sales Incentives - Instrument

makers feel the key to 1960 sales increases is the growing drive to increase productivity. In an effort to boost output and hold down costs, industry is turning to improved instruments and controls.

Important, too, will be the stepped-up pace of capital spending this year. A good portion of the spending to improve present plants and equipment will go for instruments.

One manufacturer, I. Melville Stein, president of Leeds & Northrup Co., sums up the 1960 outlook this way: "Prediction of an increase in our orders this year (about 10

Instruments Continue as a Growth Industry

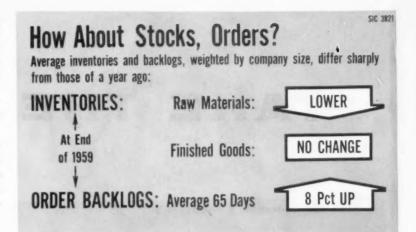


pct over 1959 levels) is based on data showing an increased rate of spending to modernize existing plants and to build new plants. Industry must give constant and increasing attention to obtaining increased productivity . . . and halting the serious inroads being made by foreign products.

"It is now recognized in many businesses that the most effective and least expensive way to increase output is through the use of modern instrumentation and automatic controls."

Price Outlook — Together with the sales increase in '60, instrument makers foresee an increase in profits. An earnings improvement averaging 6 pct is predicted.

Generally, there's optimism that prices can be held reasonably stable. But, as a group, the industry expects price increases averaging 2 pct. One manufacturer states, "We shall make every effort to avoid any price increases, but some



modest increases may be necessary."

New Products Planned — New product development will be important in the instrument industry this year. Over 90 pct of the companies surveyed plan to introduce new products. Others said they were seeking ways to strengthen marketing and sales techniques.

Instrument industry backlogs have not advanced much in the

past year. An average backlog of 65 days was reported at the end of 1959. This was only an increase of 8 pct over 1958 levels.

Inventories Stable — Inventories of raw materials and finished goods have also shown little change. Raw materials stocks were higher than in '58 according to 35 pct of those reporting. Thirty-seven pct said they were the same.



TAKE THE LONG

Plan for tomorrow's needs, today!

An R. D. Wood Press can be the key to better production capacity needed today . . . and equally efficient capacity in a growing economy in the years to come. In terms of today, you replace worn out equipment, increase production rates and cut excessive downtime. For the long pull, you are in a position to produce top quality products with top operating efficiency and stay on top of heavier production schedules with equipment that can still deliver . . . day, after day, after day.

Check the stamina story of R. D. Wood Presses, today. The long-range sure economy, too. Write for information on the type of press or presses that you require.

The presses illustrated here are representative of the complete line of hydraulic presses and valves produced by R. D. Wood Company.

All of those shown are available in various capacities and others are available for different operations. Write to R. D. Wood Company for recommendations on the press to suit your specific problem.



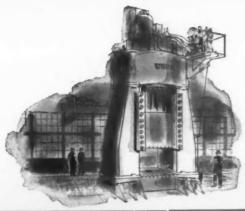
R. D. WOOD COMPANY

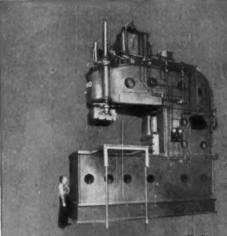
PUBLIC LEDGER BUILDING . PHILADELPHIA 5, PENNSYLVANIA





LOOK!





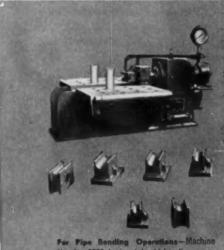
For Straightening Operations—Machine Number 8725, HydroLectric open-gap press. Capacity, vertical ram, 750 tons, horizontal ram, 400 tons; gap, 7'0"; vertical daylight, 4'5"; height of press, 26'5"; floor space, 21'10" x 20'0".



For Flanging Operations—Machine Number 8487, sectional hydraulic flanging press—also for joggling and upsetting operations. Capacity with vertical rams in unison, 300 tons; horizontal ram, 115 tons; stripper ram (in bed),115 tons; gap,50°; vertical daylight,3'9°; height of press, 15'9°; floor space, 5'0°x14'2°.



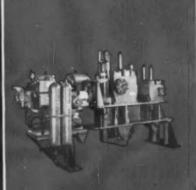
For Bending and Forming Operations— Machine Number 8548, hydraulic press, Capacity, 1,500 tons; moving platen size, 1'10' x14'2"; ram stroke, adjustable, 4'0"; height of press, 29"; floor space, 160"x15'6".



For Pipe Bending Operations—Machine Number 9089, horizontal cold-bending press, complete with self-contained pumping system. Capacity, 25 tons; stroke of ram, 1½°; table size, 2°8½° x4°2°.



For Tube Testing Operations—Machine Number 9284, hydrestatic tube testing machine. Capacity, 4½" to 12" OD tubes, maximum tube length, 35'; test pressure, 700 to 1,500 ps; average production (12" tubes, 35' long), 30 per hour; floor space required, 5'0"x45'0".



Complete Line of Hydraudic Yolves—Every hydraudic valve you need for a new system of updating an existing installation. Choose from a complete line of stop valves, check valves, operating valves, safety relief valves, shock absorbers, accumulator control valves and a large variety of special valves.

Look for More Numerical Controls

They'll Take the Spotlight at 1960 Exposition

Most machine tool builders will bring out new products this year, as they get ready for the Exposition in September.

Numerical controls, imports, steel strike and depreciation revision are uppermost in builders' marketing plans.

Machine tool sales will be 14 pct higher this year than in 1959. Profits will increase 13 pct and prices three pct.

This prediction comes from machine tool companies which employ about 66 pct of all production workers in the industry. Backlogs at the end of the year stood at 87 days against 60 days in year-end 1958, an increase of 45 pct.

Big Year Ahead—Behind these figures lies an important year for the machine tool industry. Highlight of the year will be the Machine Tool Exposition in Chicago, during the early part of September.

Here, builders will display their latest equipment for improving pro-

duction efficiency. Beset by mounting imports of lower-priced foreign machine tools, the industry will be out to prove that U. S. machine tool technology provides the best answer to lower production costs.

Many New Products — Seventyfive pct of the companies responding to The IRON AGE annual survey report they will bring out at least one, probably more, new products this year.

This unusually high figure reflects the all-out drive to put a best foot forward at the Machine Tool Exposition. Numerical controls may well grab the spotlight.

Of all the comments from machine tool builders this year, numerical controls was the one most mentioned as having the most important effect on the industry during 1960.

Import Threat—The next most frequently mentioned subject was foreign imports. More and more, companies are either building overseas or looking into the possibilities. The reason: Lower labor costs and

consequently a chance to regain foreign markets for standard-type machine tools. Meanwhile, imports of machine tools to the U. S. are seriously hurting some companies.

Steel Strike Effects — The steel strike was another important concern for tool builders. Many fear a new work stoppage in late January will slow up order placing. But once steel starts flowing, backlogs will lengthen sharply.

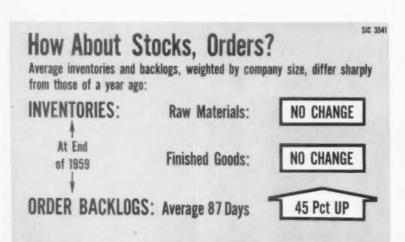


Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

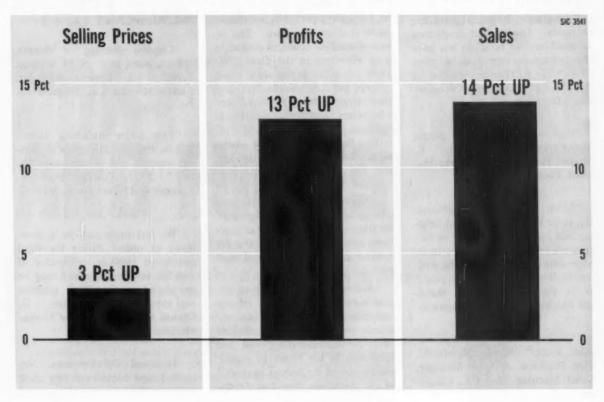
"Imports of foreign machine tools will be our biggest problem." A. J. DeWolf, President, **Dreis & Krump Mfg. Co.,** Chicago.

"The aftermath of the steel strike could very appreciably delay any quick upturn in the capital goals industry and what might have been a good first quarter may now be tight—with continued rough competition. Our advice to the purchaser would be to buy his capital equipment now while deliveries are good—and be ready to go when steel loosens up." J. C. Pease, President, New Britain Gridley Machine Div., New Britain, Conn.

"A more realistic depreciation policy in our tax laws would do



Machine Tool Outlook: Higher Sales, Profits



much to improve sales. The big machine tool market is in replacement for greater productivity. The Machine Tool Show in September 1960 should improve the market picture." A. V. Bodine, President & Treasurer, **Bodine Corp.**, Bridgeport, Conn.

"We expect to increase the sale of our tape-controlled machines. And we propose to distribute our lower priced machines through dealers, thus getting wider distribution." F. G. Burg, President & General Manager, Burg Tool Manufacturing Co., Inc., Gardena, Calif.

"We feel we must develop new machines of quality and operating precision in order to compete with present comparable equipment of foreign manufacture. This problem must be met if we are to maintain our position in the industry. Price is also an important factor in keeping ourselves competitive due to high labor costs in this country compared with those abroad." H. P. Chaplin, President, Cone Automatic Machine Co., Inc., Windsor, Vt.

"Inadequate pricing due to general low level of activity." W. H. Bennett, President, The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio.

"Development and sale of a new line of bearings which we will carry in stock and offer at considerably lower prices so that many more users can use anti-friction bearings." F. J. Donovan, President, The Kaydon Engineering Corp., Muskegon, Mich.

"Numerical controls." G. H. Johnson, President, Gisholt Machine Co., Madison, Wis.

"Unquestionably the impact of the 1960 Machine Tool Show on our industry and on the metal trades at large will be important and substantial. Many new developments will make their first appearance at this show. Our company, for example, will show, on public exhibition for the first time, a new line of microstoning equipment, representing a new and revolutionary breakthrough in the production of superlative surface finishes and the correction of the geometry of out-ofround and lobular work. We should expect and hope that the long deferred recovery of the machine tool industry will take place in the ensuing year." F. S. Blackall, Jr., President & Treasurer, The Taft-Peirce Mfg. Co., Woonsocket, R. I.

"Customer attraction to tape control and spacing tables heads the list on the technical side." W. A. Dermody, President & General Manager, Carlton Machine Tool Co., Cincinnati.

Continued

"Resistance to prices prevailing currently. Quality and production of machines we build do not have the influences they had in prior years." J. A. Hauser, Assistant to the President, David & Thompson Co., Milwaukee.

"Improved small tools permit higher spindle speeds—yearly." C. Strauss, President, U. S. Burke Machine Tool Co., Cincinnati.

"More electrolytic machining, Big surge to convert new and existing tool and cuttle grinders, surface grinders and special machine tools. More editorial items should be written as this subject big new field." W. A. Ferguson, President, **Standard Electrical Tool Co.**, Cincinnati.

"The importation of foreign machine tools." W. G. Rosendahl, Vice President & Sales Manager, Nebel Machine Tool Co., Cincinnati.

"Increasing wages require machines to make offsetting cost reductions." R. A. Cole, Executive Vice President & General Manager, Production Machine Co., Greenfield, Mass.

"It is felt that the Machine Tool Show of 1960 will have an effect on the sale of equipment. I predict that there will be a substantial increase in orders in the last quarter of 1960, as a result of the Machine Tool Show." F. X. Bujold, General Manager, Frauenthal Div., The Kaydon Engineering Corp., Muskegon, Mich.

"We think there is a vast market for some new machine tool ideas in the 'medium production' field where production is neither high nor low. We visualize transfer lines in these plants—not of the conventional variety—but a line of standard machines with transfer devices in between to move the work pieces.

Each machine would be self-contained, could be put into the line or removed depending whether or not its particular operations were needed to machine the part. The removed machine could, of course, be used elsewhere in the plant. We know this is not in any sense a new concept but it is one that has, to a great degree, been neglected and now seems ideal for application to medium production'." N. M. Forsythe, President, National Automatic Tool Co., Inc., Richmond, Ind.

"Development of electrolytic machining holds considerable promise for processing, like grinding of gears from hardened blanks and also for contour grinding in hardened steel parts. . . .

"Automation as applied to the gear industry is still in its infancy and many new ideas are on the boards and may have considerable effect on manufacturing costs and accuracies in the future to greater elimination of the human element." M. R. Anderson, President, Michigan Tool Co., Detroit.

"The biggest future problem anticipated is low price foreign equipment invading American markets. It is economically impossible to combat such low prices with our high cost standards of labor and material." P. W. Pearson, Sales Manager, Kling Bros. Engineering Works, Chicago.

"Greater use of aluminum in the automobile industry." W. C. Olson, President, Besly-Welles Corp., South Beloit, Ill.

"I think it will depend upon steel available to our customers." C. W. Bettcher, chairman, The Eastern Machine Screw Corp., New Haven, Conn.

"Too much money is being spent on inadequate, or incompetent maintenance. Skilled anticipatory maintaining needs thinking about!" J. A. Bradner, President, Lees-Bradner Co., Cleveland. "Improved competitive products." J. E. Erskine, President, Racine Hydraulics & Machinery, Inc., Racine, Wis.

"Chipless forming of threads, splines, gears, etc." S. M. Stiehele, President & General Manager, Landis Machine Co., Waynesboro, Pa.

"Two major marketing factors will be the introduction of numerical control and foreign competition." F. J. Trecker, President, Kearney & Trecker Corp., Milwaukee.

"We feel there may be a slowdown in orders during the third quarter of 1960 in anticipation of possible new models which may be introduced at the 1960 machine tool exposition in September." G. Gorton, President, George Gorton Machine Co., Racine, Wis.

"Technical Developments: Numerical tape control for very close tolerance boring and milling; and semi-automatic machines, tape controlled if desired, for small lot production at reasonable prices. Marketing: Education of industry of the importance of the cutting tool to optimum machine performance. Explanation to industry of proper methods of grinding and caring for cutting tools to achieve better tool life. Help industry justify purchases of new machines, particularly with sophisticated control systems. This will require careful study, both builders and users." H. A. Beyer, Vice President, Sales, De Vlieg Machine Co., Ferndale, Mich.

"Unless automotive finds a major change in the power train group necessary or develops a program of increased production, we anticipate little change in total industry shipments. Shipments in 1959 will not exceed 1958 and 1960 should show little improvement. The industry should continue on an extremely competitive basis." H. N. Maynard, President, Snyder Corp., Detroit.

Harris Model 30 Batch Incinerator

CONTROLS SMOKE AND FUMES

HANDLES 4 AUTO-BODIES AN HOUR ... CONTINUOUS OPERATION:

This first of a complete line of incinerators being engineered and manufactured by Harris is intended to meet the needs of the smaller operations. Its simplicity, overall cost, and flexibility of installation permit purchase of complete factory built unit, or if you prefer, the major and controlling components can be bought separately. This provides an ideal arrangement for the smaller dealer. The exceptionally effective afterburner provided has the capacity to smokelessly burn all combustible matter, except tires, in 4 automobiles per hour at the maximum firing rate of 40 gallons of #2 fuel oil per hour.

SPECIFICATIONS

20' long x 14' wide x 10'-8" high at eave 14' at gable (3,600 cu. ft.) Kiln size. Burning time 25 minutes Hourly capacity. 4 automobiles or combustible equivalent Door openings 11'-0" x 10'-6" (10'-8" above tracks) Afterburner lining 9" insulating firebrick, 2,300° F. rating Stack diameter 36 inches Stack height. 35 ft. above ground Estimated weight. 55,000 pounds

Talk with a Man from Harris

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Since 1889

CORDELE, GEORGIA



Malleable Founders Look to '60

A Modest Improvement Seems Likely

Malleable iron founders should have a good year in 1960. The only problem is competition.

They will turn to extensive advertising campaigns to acquaint users with their products.

■ Malleable iron founders are looking forward to a good year in 1960. As they enter the new year, raw material inventories are in good shape and order backlogs have increased somewhat over December. 1958, levels.

They still face the same problem they did a year ago: Competition. But even in the face of this, profits are estimated to climb eight pct with a sales increase of six pct.

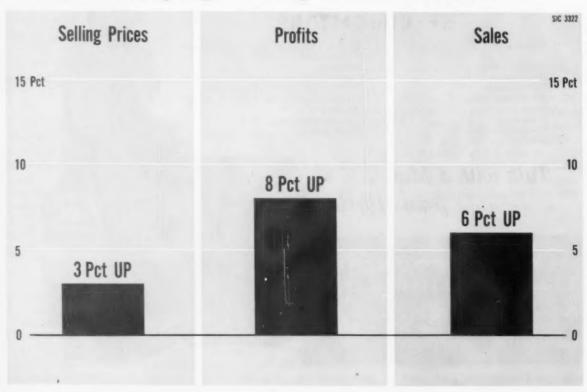
Tight Price Line—Because of the stiff competition, prices will have to be held in a tight line. Estimates by industry members indicate the average price increase will be about three pct. There is a reluctance to go above this figure and even this will not come about unless absolutely necessary.

Order backlogs at the end of 1959 were up 18 pct over a year ago. Deliveries now will take about 39 days. In late 1958 they took 32.

Raw Materials Good - There should be no production cutbacks or delays because of inadequate raw material supplies. Of firms responding to The IRON AGE survey, 37 pct said they have more raw materials on hand than they did at the end of 1958. Another 58 pct said their levels are about the same, and only five pct had lower inventories.

Many founders are planning to exploit the advertising field to make their products more generally known and to get more sales. Others feel that the ad campaign being carried on by the Malleable Iron Founders' Council will serve as a

Will Ad Campaigns Bring Fatter Profits?



means to acquaint potential users with products of the industry.

Road to Profits—Shell molding and pearlitic malleable iron are also looked at as a means to greater profits during 1960. Many manufacturers feel these will account for greater sales, and give them top billing on their list of items that will be of most benefit to the industry this year.

Others feel the cost of equipment expansion during 1955-57 has been made up, and that there will be new demand for machine tool products. This, of course, will mean a business increase for malleable founders.

Although a few men in the industry do not look at 1960 as a prosperous year, the consensus is that it will be profitable.

What Industry Executives say:

Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Technical—Development of ascast material with minor heat treat to give equivalent porperties of malleable. Marketing—The number of autos sold." J. J. Shellaburger, Vice President, Industrial Sales, The Dalton Foundries, Warsaw, Ind.

"Better engineering conception of malleable use—through advertising —should broaden scope." J. W. Schauss, Controller, Muncie Malleable Foundry Co., Muncie, Ind.

"Effects of the malleable castings council advertising program and hard selling." A. F. Crone, Executive Vice President, Acme Steel & Malleable Iron Works, Inc., Buffalo.

"Shell molding; the industry's ad-

How About Stocks, Orders?

Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago:

INVENTORIES:

Raw Materials:

NO CHANGE

SIC 3322

At End of 1959

ORDER BACKLOGS: Average 39 Days

18 Pct. UP

vertising plans; and pearlitic malleable iron are the three we rate at the top." U. C. Brisse, Treasurer, The Laconia Malleable Iron Co., Inc., Laconia, N. H.

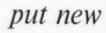
"We feel that the coming year will see the completion of the diges-

tion process relative to the tremendous capital equipment expansion of 1955-1957 and that there will be a resurgence of demand for the products of the machine tool industry, of which we are a part." J. A. Currie, President and Treasurer, Erie Foundry Co., Erie, Pa.



100 and 200 Series HyPowermatic Milling Machines have the flexibility for both small lots and high production runs. Two-direction table feed cycles and automatic spindle stop are standard feature-advantages. Built in plain and duplex styles with conventional table feed cycles, and automatic rise and fall and tracer controlled styles with Telematic selection of cycles.

These STARS of





Centuramic Centerless Grinders raise quality standards and broaden the range of the centerless method. The 210-6 is the "Handy Andy" size for job shops, while the 340-20 size at the other extreme introduces a new extra low-cost concept . . thrufeed grinding with 20". wide wheels.



Telematic Control is a simple pegboard selection of table and spindle carrier automatic cycles. Auxiliary operations such as fixture clamping may also be plugged in. Applicable to 100 and 200 Series Rise and Fall and Tracer Controlled HyPowermatic Milling Machines.



Cincinnati Acramatic Numerical Control offers the unique advantage of unified machine and control design and responsibility. Its field covers simple two-axis positioning for drilling, to complex three dimensional contour milling. The above 16" Vertical Hydro-Tel Milling Machine shows a three dimensional setup.



in PROGRESS life in cost-cutting programs

Z5 WARRIVERSAN

Adventures in Progress marked Cincinnati Milling's 75th year of serving the metalworking industry. The event starred many all-new machine tools. These machines represent something more than new equipment, they represent the Mill's philosophy of always striving to build better machines to help you create greater values in your products. Information on the stars of Adventures in Progress may be obtained by writing to The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

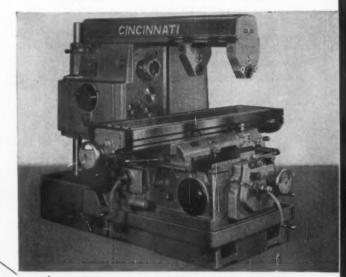


Super Precision 4" Plain Grinder puts accuracy requirements of 25 millionths on a production basis. Cincinnati's Grind-a-Mate gaging system automatically sizes the part to a ring gage or mating member.





Automatic Cutter Grinder initiates a brandnew approach to cost prevention . . . the automatic precision sharpening of cutting tools. Cutter manufacturers and high volume users of plain and stagger tooth cutters will welcome this machine.



All-Purpose Milling Machine combines flexibility of knee-and-column types with productivity of bed types. Fixed height table facilitates work handling. Wide range of speeds and feeds are selected by power with a single lever.



Elektrojet Electrical
Discharge Machines
embody the machine
tool builder's approach
to this highly significant
method of removing
metal. Give you 35
choices of equipment,
covering the requirements for unusual or
"impossible" machining
operations on a wide
variety of parts ranging
from small missile components to forging dies.

Nonferrous Founders Hopeful

Autos, Automation, Aluminum, Are the Big Factors

Nonferrous foundries figure 1960 sales and profits will be up 10 to 11 pct.

Most have stocks of raw materials better than at the start of last year.

• Automotive, automation, aluminum stack up as the big three factors in the 1960 nonferrous foundry picture. It's clear from replies to The IRON AGE survey that, as they go, so will go the industry.

It's also clear that most founders are expecting them to go well. The consensus for 1960 is cautious optimism.

Better Sales—The average nonferrous foundry expects 1960 sales to be 11 pct ahead of 1959. Price increases of about two pct are likely to put profits for the year up about 10 pct over last year.

But it will be far from clear sailing, and far from across the board. The industry most look to for support will pose a threat to others.

Automotive Factor — One foundry fears "excessive capacity causing extremely low profits or losses in zinc diecasting industry that caters to automotive."

Another complains of "the increasing trend toward setting up of new, and the expansion of, existing captive facilities . . . Captive facililities are competing in the open market for regular jobbing business beyond their own corporate structure." No doubt this founder is referring to the automakers.

More automation, particularly in diecasting equipment, will help solve a problem that is becoming more acute for job founders. This, says one founder, is "the continuous emphasis on price . . . a corresponding and completely illogical emphasis on quality without any apparent conception of the incompatibility of the two."

Lots of Inventory—Even if business is better, they won't be much of an improved market for primary metal suppliers, at least for a while. The IRON AGE survey revealed that 53 pct of nonferrous foundries finished 1959 with more raw material in stock than at the start of the year. Only two pct had less. And the other 45 pct finished up the year with about the same raw material stocks as they had last January.

An indication that the founders are building their hopes on solid ground is that backlogs dropped almost imperceptibly in 1959. The average backlog of those replying to the survey at the end of 1959 was 50 days, compared to 51 days at the end of 1958.



Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"The increased use of aluminum in automobiles." G. H. Murry, Ford Motor Co., Die Casting Div., Sheffield, Ala.

"The use of aluminum in automotive field should be the most important influence on the foundry

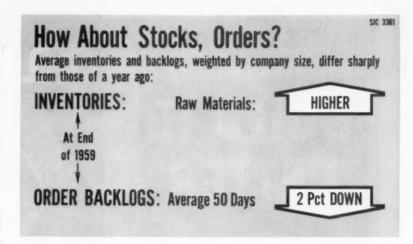


industry. This influence will not only be from increased tonnage but from the effect of automation brought about by demands of production and price from the automotive industry." K. A. Kigney, President. Oberdorfer Foundries, Inc., Syracuse, N. Y.

"Automation of diecasting machines." F. C. Livesay, President, Kuhlman Die Casting Co., Kansas City.

"The expansion of industry seems to be greater than availability of qualified sales and supervisory personnel. Machinery is no problem—we can tool and produce any job. What we need is more people with a dedicated incentive to succeed." R. R. Dreibus, President, Harvill Corp., Los Angeles.

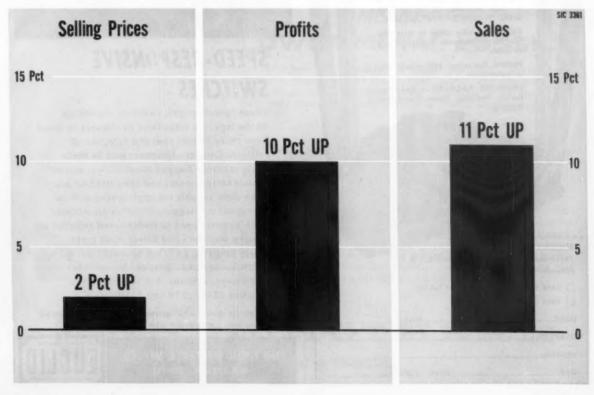
"During the past three years, the investment casting industry has seen radical changes among the pro-



ducers. A few better companies grew stronger and wiser while others faded in comparative prestige and production and technical capacity. Several discontinued operations. We believe this is healthy, for the industry and for the customer. At the same time, however, this industry stabilization has re-

flected a greater need than ever before to meet competition more aggressively. Our situation is neither unique nor singular; skillful overall marketing and constantly improving customer service is demanded." J. H. Morison, President, Hitchiner Mfg. Co., Inc., Milford, N. H.

The Goal: 10 Pct Improvement in Profits



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For increased production at reduced cost specify Berger quality tubing. Our complete engineering facilities can help you widen your design potential and produce a better product, at a better price.

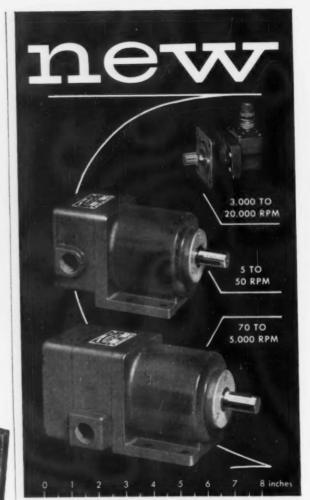
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These control-circuit switches, depending on the type, are responsive to changes in speed from 1½ to 20,000 rpm and direction of rotation. Contact adjustment may be made while running. Rugged construction, several contact arrangements and consistent accuracy make them suitable for applications such as zero-speed or plugging switches on machine tools, as over-speed or under-speed switches on rotating machines and drives of all types, as anti-plugging switches on machinery with inertia loads and as interlocking switches for conveyor systems. Ask for descriptive Bulletins 2210, 2220 and 2230.

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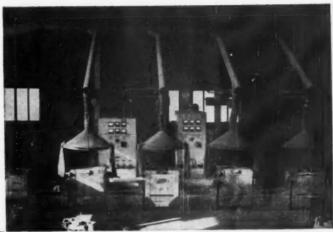
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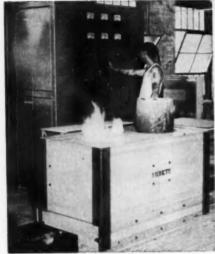
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Metal losses, as encountered in conventional melting practices, are reduced to insignificance by INDUCTOMELTING. The savings realized with Inducto melting equipment, though substantial in all metals, are particularly great in the easily oxidized or volatile alloying materials.

One non-ferrous foundry cut melting losses 80% through INDUCTO-MELTING. This was made possible by higher melting speeds and the remelting of chips and turnings from machined castings which could not be done with the previous equipment without extremely high metal losses.

Why? Why should Inducto melting equipment provide such savings in metal? Because every component is designed and selected for the highest possible efficiency so that you can attain all the benefits of high-frequency induction melting at its best. With Inducto equipment, you get the highest possible melting speeds and the most accurate temperature control in the melting field today. Write for complete details—ask for Bulletin 70. Inductotherm Corporation, 412 Illinois Ave., Delanco, N. J.

*INDUCTOMELTING is high-frequency induction melting PLUS the additional advantages of Inducto design features and engineering techniques.



INDUCTOTHERM

... the mark of modern melting

Buyers' Market in Compressors

Tough Competition Will Have Producers Scrambling

One answer to competition: A large number of new items will be introduced in 1960.

Pump and compressor makers are also in good position to keep delivery time down.

Pumps and compressor makers start the new year facing the same old problem - tough competition. And they know it.

"Competition will be tougher and I don't mean maybe," reported the head of one major pump company.

The figures tell the story of how rough they expect things to be. The average pumpmaker answering The IRON AGE survey expects to translate 11 pct boost in sales over 1959. and a three pct increase in prices to realize a five pct increase in profits.

Problems Ahead - There are likely to be more gray hairs in the industry at the end of 1960 because this year the perennial problem has an additional twist. But a complication that others in metalworking also face. Quite a few answers to the survey complained of the increased competition from foreign pumps and compressors. Several suggested our tariff ought to have a good, long, second look.

What do pump and compressor makers propose to do about their problem? They'll all meet it head on. Says one: "Marketing is going to require a closer, more detailed. more intelligent and better qualified selling contacts."

New Products Coming - But this will only be the start. About 80 pct of the respondents to the survey said they planned to introduce one or more new products in 1960.

One pump maker said he is going to put more emphasis on quality at the consumer level. And several pointed to expected new developments in materials and methods that they expect to give them some

All in all, it looks like a buyer's market in pumps and compressors in 1960. Not only will makers be ready to compete on price and quality, but they're geared for pretty quick delivery throughout 1960.

Inventories High-Of those answering The IRON AGE survey, 45 pct have bigger stocks of finished goods than at the end of 1958. And 46 pct have about the same level of finished goods on hand. Only nine pet are off from 1958.

When discussing problems of pump and compressor makers, you can't leave out the steel strike. Due in great part to the strike, the industry is vulnerable on raw material stocks.



Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

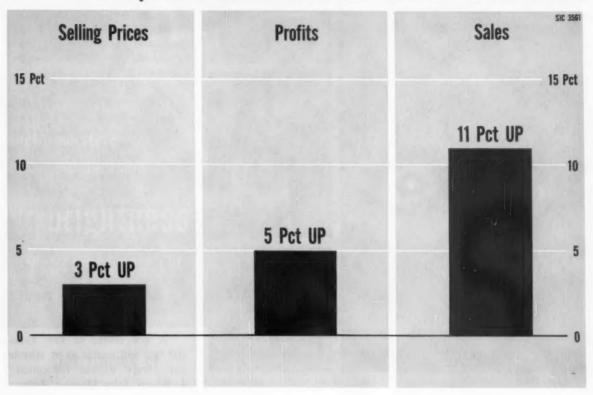
"Habitual price selling and cutting." A. F. Woods, General Sales Manager, Marlow Pumps, Midland Park, N. J.

"There will be many technical developments in the pump industry during the next year, but we feel that the marketing problem will be more intense. Capital goods industry have not recovered as rapidly as consumer items, but we feel there will be a tremendous market for equipment of all sorts. The marketing problem will have to do with extended deliveries due to steel and iron shortages which will extend deliveries." R. Webber, Vice President, Deming Co., Salem, Ohio.

"Imports." A. Arutunoff, Presi-

How About Stocks, Orders? Average inventories and backlogs, weighted by company size, differ sharply from those of a year ago: INVENTORIES: Raw Materials: LOWER At End **Finished Goods:** HIGHER of 1959 ORDER BACKLOGS: Average 65 Days 18 Pct DOWN

It's Up to New Products to Increase Sales



dent, Reda Pump Co., Bartlesville, Okla.

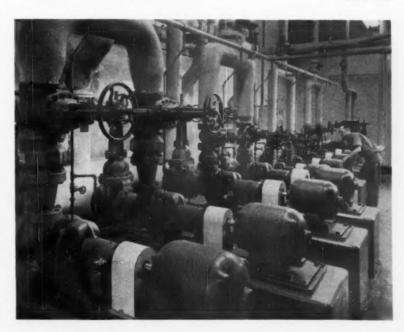
"Larger pumps tor higher tonnage presses. Larger fluid power drives for steel and paper mill applications. What I believe to be the first major steel mill hydraulic drive will be installed in 1960. Optimism for additional drives in this field are already evident." M. E. Engebretson, Advertising Manager, Oilgear Co., Milwaukee.

"The problem will be to make an adequate profit without material change in prices." J. S. Bennett, President, Hale Fire Pump Co., Conshohocken, Pa.

"Automation, technical developments in proportioning and aircraft fueling will increase our sales. Trend to electrical and gas heating will adversely affect our sales." B. L. Gordon, President, Blackmer Pump Co., Grand Rapids, Mich.

"The outcome of the steel negotiations, and copper strike. Particularly as it affects industry's ability to increase production efficiency. This is a very crucial battle for the progress of American industry." G. Wilfley, President, A. R. Wilfley & Sons, Denver.

Continued











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By using Shenango centrifugal castings for essentially symmetrical parts, you will gain considerable savings because:

- The Shenango process automatically eliminates hidden defects in the metal . . . insures fewer rejects.
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Pumps and Compressors, continued

"Improved product quality, selling tools, training, and stable prices in face of higher costs." M. Irwin, President, **Quincy Compressor Co.**, Quincy, Ill.

"Competition will be tougher and I don't mean maybe!" C. M. Hoover, President, Columbian Pump Co., Columbiana, Ohio.

"We are attempting to reduce costs and hoping for increased production to overcome additional inflated material and labor costs. Improving products and try to avoid increasing selling prices so as to help hold the line on inflation. Also meet foreign competition." E. R. Snovel, President, Pennsylvania Pump & Compressor Co., Easton, Pa.

"A new source of vane material that will enable us to operate our pumps without lubrication."

J. Whipp, Sales Manager, Leiman Bros., Newark, N. J.

"Competition from other nations is a serious factor both here in U. S. and in our foreign shipments." G. T. Schurhan, General Manager, **Taber Pumps Co.,** Buffalo, N. Y.

"Our aircraft parts production may be affected to some extent by the change to missiles." E. M. Freeman, President, Freeman Co., Yankton, S. D.

"We believe quality control is most important in this field." T. R. Ruthman, Vice President, **Ruthman Machinery Co.**, Cincinnati.

"Continuing rapid increase in the variety of applications of high vacuum to all phases of metallurgy. Constant pressure to provide furnaces which will attain higher temperatures—5000°F and higher." D. N. Reece, Manager, Steel Products Sales, NRC Equipment Corp., Newton, Mass.

where moisture and abrasion

meet brightness

that never wears out

sink frames of

Superior

STAINLESS STRIP STEEL

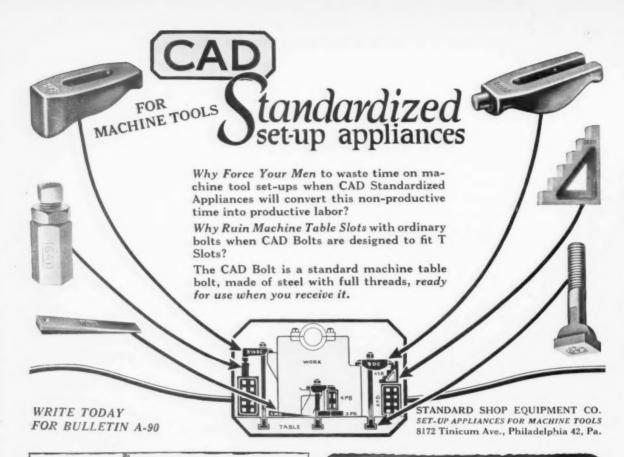
নাতাতাতাতাত

At the toughest spot in the kitchen, Superior Stainless shows its metal best... the ever-bright, smooth gleam that asks no more than a wipe to reflect a housewife's pride. • Solid Superior stainless sink frames fabricate uniformly well because composition, dimensions and temper are uniformly as specified, every time. • We can serve you exactly as you wish. Ask us!

SUPERIOR STEEL DIVISION

OF COPPERWELD STEEL COMPANY CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York





A TIP FOR THE TIMES

SPEED **HEAVY WIRE PRODUCTION**

with ADVANCED

AUXILIARY EQUIPMENT



with Positioning Base

Meeting today's need for better pre-drawing preparation and handling of heavy wire, Vaughn presents this new Floor Reel upon which the coil is lowered, with Positioning Base. This advanced equipment permits the straightened, pointed wire end to be passed through die to grip with small effort by the operator-and better production!

Extra-Heavy

4-ROLL CONTINUOUS POINTER

This king-size pointer is capable of accommodating a range of wire from 1/4" to 11/4". It has , two vertical and two horizontal rolls for ease of pointing without twisting the wire, and is in every way a heavy, rugged, long-life machine for the most arduous service.

ROLL STRAIGHTENER

At the beginning of the pre-drawing preparation cycle is the new Vaughn 3-roll straightener, where a section of the trolley-transported wire coil is mechanically straightened. This makes handling to pointer and die box an easy matter, contributing to the time and manpower savings that help boost production with modern Vaughn equipment. Details? Gladly, on request.

The Vaught



Cuyahoga Falls, Ohio, U.S.A.

COMPLETE COLD BRAWING EQUIPMENT—Continuous or Single for the Largest Bars and Tubes . . . for the Smallest . . Forrous, Non-Forrous Materials or their Alleys.

Stamping Sales Will Rise in '60

Contract Stampers Expect 6 Pct Boost in Sales

As a group, contract stampers look forward to better sales and profits this year.

But industry has problems, including lack of raw materials and pressure on prices.

Stampers believe some price increases, possibly of around 2 pct, are likely.

■ Contract stampers expect sales to increase about 6 pct this year. But they are concerned about supply problems (especially steel) and the effect of cost increases on prices.

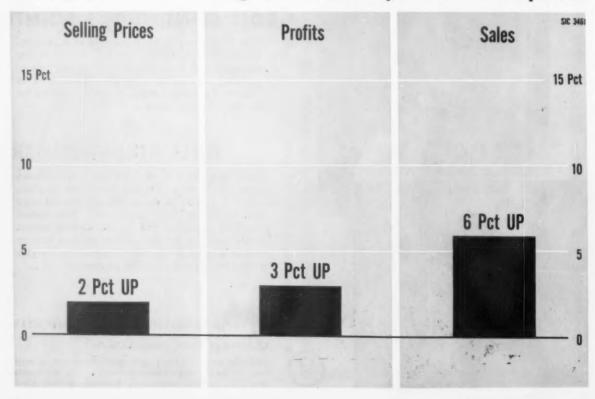
While the Standard Industrial Classification (SIC 3461 "Metal Stampings") include captive shops, The IRON AGE surveyed contract stampers only so as to exclude companies where contract stamping may be only a small part of the total operation.

Backlogs Up—Backlogs have rebounded strongly from 1958 lows. At the end of 1959, the industry's backlog averaged 87 days, contrasted with a 60-day level the year before. This was an increase of 45 pct over year-end 1958. Backlogs are weighted on the basis of plant employment so a large total of orders for a small plant will not distort the picture. Weighting is also applied to answers on inventories. But replies on sales, profits, etc., are unweighted individual replies.

Supply Worries — Almost without exception (see quotes on opposite page), stampers are worried about steel supplies. They feel shortages will hurt their efforts to meet buyers demands.

There is also concern about the

Competition Is Tough, But Stampers Are Hopeful



effect any steel price changes will have on stamping prices. The industry believes some price increases are inevitable this year. An increase averaging 2 pct is expected.

Under Study — Price pressure may be coming from an unexpected source: Quality control. Some stampers, while proud of the industry's standards in quality control, feel it may be overdone. Too much emphasis, they believe, will create a constant increase in the price of parts produced.

Other manufacturers are focusing attention on marketing efforts. Design, aimed at product improvement, is also getting attention.

What Industry Executives say:

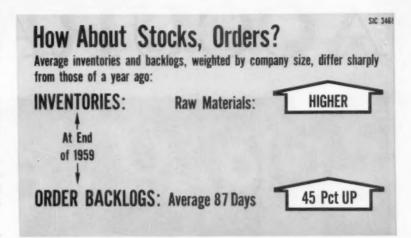
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Availability of raw material in quantity to keep pace with demand, thereby stimulating a highly competitive market." C. J. Brumm, Manager of Sales, Stamping Div., Transue & Williams Steel Forging Corp., Alliance, Ohio.

"A marketing problem would be created by a rise in the price of steel. Technically, we look forward to designing and making more shapes of comparatively simple stamped layers held together various ways (stacked stampings)." C. C. Higgins, President, Worcester Pressed Steel Co., Worcester.

"Ability to obtain raw material consistently." W. B. Walker, Jr., President, Walway Co., Detroit.

"Outcome of the steel strike and of negotiations between the union and the auto manufacturers." J. A.



Jurist, President, The Rober Tool Corp., Cleveland.

"Our marketing problem is primarily geographical. We have found that a personal direct mail program, highly selected and screened brought nearly a 70 pct return. Of that 70 pct, we sold half of them on their first inquiry. In some cases, we were competing against 10 to 15 other contract stamping manufacturers. Of the remaining half on the special list, we have their interest and I am certain that with proper sales interest and effort, we can develop most of these potential ac-

counts." F. J. Loftus, Executive Vice President, Res Mfg. Co., Milwaukee.

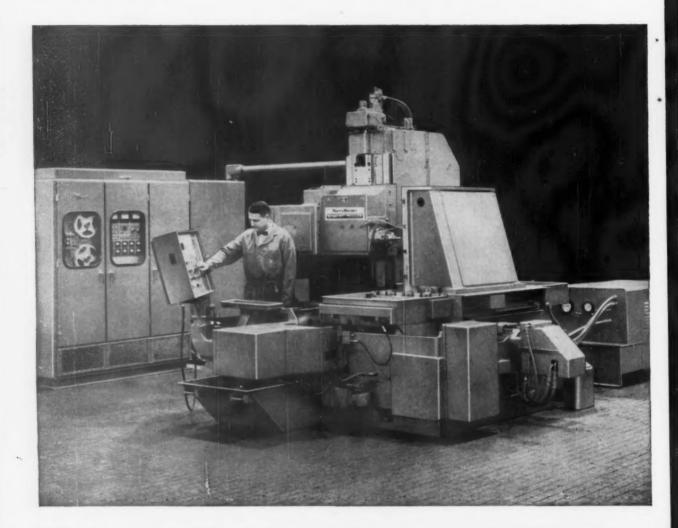
"Steel deliveries." B. Bolling, President, Anderson - Bolling Mfg. Co., Grand Haven, Mich.

"Possible shortage of steel." J. W. Robinson, Sr., President, Midwest Stamping & Mfg. Co., Bowling Green, Ohio.

"Use of captive shops." R. H. Serrick, Manager, **Defiance Stamping Co.**, Defiance, Ohio.

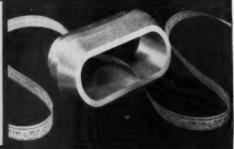


ACCURACY









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ONLY 21.5 HOURS . . . were needed to machine this complicated tool steel missile part on a Numeric-Keller. Machining involved 3 roughing and finishing contour cuts and 4 roughing and finishing pocket milling cuts.

3-DIMENSIONAL MILLING UNDER TAPE CONTROL...is demonstrated by this vision block for a super-modern military tank. Geometry is quite complex. Tape was prepared using both computer and hand computations.

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TOOLING COSTS and LEAD TIME CUT AS MUCH AS 75% . . . because the P&W Numeric-Keller is equipped for continuous-path milling under the direction of a tape-reading numerical control system, Models, templates and other costly, complicated tooling are

EXTREME ACCURACY... with overall production easily held to ± .001". Piece-to-piece reproduction accurate to "tenths" is possible with controlled cutter selection.

UNUSUAL VERSATILITY . . . with more different types of jobs done faster and better. Short and long runs are handled with equal efficiency. Using tape, changeover is fast and easy, with minimum time lost between jobs.

MACHINE UTILIZATION IS GREATLY INCREASED . . . because more time is spent making chips, with less time needed for setup, fixturing and other non-productive operations. Similarly, man-hours are made more productive.

MACHINING TIME IS SLASHED . . . because tape control means maximum speeds and feeds programmed through all phases of the machining cycle. Optimum machining practice at all times also means finer surface finishes.

SEND NOW FOR THE CASE-HISTORY FACTS . . . that show how the P&W Numeric-Keller has saved HOURS of setup, tooling and machining time on dozens of jobs like the 3 examples shown on the facing page. See how this revolutionary machine can produce equally important savings on the toughest milling jobs in YOUR plant. Write today for your copy of Circular No. 624, that includes Job Analysis Sheets to

give you the dollars-and-cents facts on Numeric-Keller savings. Pratt & Whitney Company, Inc., 10 Charter Oak Blvd., West Hartford, Connecticut.



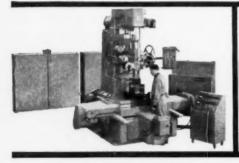


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MACHINE TOOLS . GAGES . CUTTING TOOLS







OTHER P&W NUMERICALLY CONTROLLED MACHINE TOOLS . . .

include the Jig Borer, Vertical Precision Hole Grinder, and Precision Rotary Tables. Providing settings accurate to .0001", made automatically from data supplied by punched tape or operator keyboard, the Jig Borer and Hole Grinder combine toolroom precision with production-line speed and ease of operation. Equally efficient for short- or long-run production work. Ultimate in speed plus precision in circular spacing, graduating, and angular positioning, the Pratt & Whitney Numerically Controlled Rotary Table provides automatic settings accurate to 5 seconds of arc!

Steel Forging Sales to Climb

Steel Shortages Are the Big Problem

Shortages created by the steel strike will be the major problem facing the steel forging industry.

When shortages are overcome, manufacturers should have a good year in sales and profits.

• Steel shortages will be felt by most of the steel forging industry in the early months of 1960.

Raw material shortages were reported by 78 pct of the firms responding to the survey. Only 13 pct were able to report higher levels of inventories than they had at the end of 1958.

Sales, however, are expected to be eight pct over 1959, and estimates call for a seven pct rise in profits. Price increases are expected to be in the two pct range.

Greater Backlogs — Deliveries will be slower as order backlogs are 30 pct greater than a year ago. It will take about 91 days for deliveries, at least during the early

part of the year. This is in comparison to 70 days at the end of 1958.

Another indication that steel will be the major problem confronting the industry is that manufacturers have few other problems in common. Other than steel, they list a wide variety of possible headaches, but no other factor stands out to affect the industry in general.

New Campaigns—As a means to higher sales and profits in 1960, some manufacturers plan to concentrate on greater sales promotion and advertising campaigns. This, they feel, will create better customer relations, create a greater steel forging market, and help to combat importation of foreign steel.

Others feel technological advances will lead to greater productivity at lower costs and increased profits. Many steel forgers maintain that stabilization of the dollar must come about to insure a good upward business trend.

Transportation Problem—However, one problem causing some concern in the industry is transportation. Manufacturers fear that increased rail and trucking rates will be a serious hinderence to sales. One says increased rates may tend to restrict purchases to plants nearest the user. Long distance sales may be cut drastically.

Increased production in the automotive, farm implement, heavy truck and tractor industries is anticipated by some steel forgers.

What Industry Executives say:

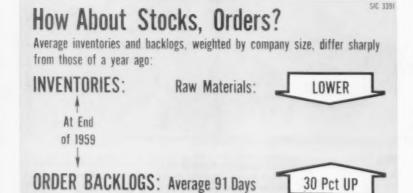
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Halting the inflationary spiral."
H. J. Flinn, Treasurer, Brewer
Titchener Corp., Cortland, N. Y.

"Greatest research and development effort will be directed toward continued improvement in quality of steam turbine and generator rotor forgings." H. C. Lackey, Manager, Forging Products, U. S. Steel Corp., Pittsburgh.

"Poor cost-price relationship in the closed impression die forging industry." C. W. Stone, President, Interstate Drop Forge Co., Milwaukee.

"Technical Development: Improvement in furnace design. Marketing Problem: Need for higher



profits." E. J. Carlson, President, Indiana Forge Machine Co., East Chicago, Ind.

"Let us all work together, and fight to stabilize the dollar." K. E. Walter, President, Alliance Drop Forge Co., Alliance, Ohio.

"Removal of metal electronically—Elox process in making dies. It would help a lot if the Big Three automotive companies decided to purchase more forgings from the commercial forging industry and curtail the operation of their captive forged shops." B. C. Cox, President, Melling Forging Co., Lansing, Mich.

"Advancement of education in forging technology." E. W. Cress, President, **Buchanan Steel Products Corp.**, Buchanan, Mich.

"High velocity forming and better quality steel through vacuum



Westinghouse Photo

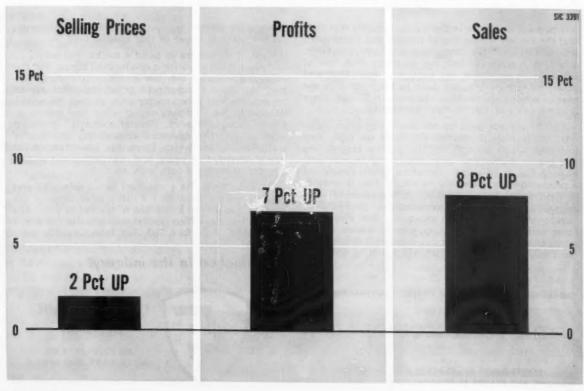
melting." C. M. Larson, Sales Manager, Chas. E. Larson Sons, Inc., Chicago.

"Settlement of the strike or of

the negotiations in the steel and railroads industries." R. T. Reilly, President, Conley Frog & Switch

Continued

A Healthy Pickup in Sales and Profits





. . . but produced to a standard*

There are still those in the tractor industry that state that the modern Eimco line of tractors and tractor-units just aren't assembly line, mass-produced machines. While, as a matter of fact, our assembly lines, one of which is shown above, are kept very well filled, and additional ones are being built to keep up with the ever-increasing demand for the modern Eimcos, there is some basis of fact in their statement.

Eimcos are **not** built by standard production methods. While mass production standards **are** high, they just aren't high enough for the quality engineering and craftsmanship that goes into every crawler unit bearing the Eimco name. Therefore, Eimco developed a production and assembly technique that is unique, in that it permits production of "custom-built" machines, without assembly interruptions. Everyone of dozens of machines going down the line may have some variation in engineering, engine, tracks, attachments or other components . . . variations, required by the end-use of the unit, that will result in immense

savings in greater work-output, lesser maintenance, for the ultimate buyer of that specific unit.

Sure, it costs more to build a tractor that way . . . but you pay no more for a quality-built Eimco. For the folks at Eimco feel that the construction, mining, timber, steel and hundreds of other industries served by thousands of Eimco tractor units all over the world, deserve to get what they expect when they specify an Eimco. More efficiency. Greater economy. Increased work-ability. The advanced engineering and quality craftsmanship for which Eimco has been famous for nearly seventy-five years, and many more extras that you get at no extra cost, with an Eimco.

Why don't you let a qualified Eimco sales-engineer explain and demonstrate the many advantages of the modern, job-proven Eimco line of tractors to you. Just contact the sales office nearest you or write The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah, U. S.A.

* The highest in the industry!

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

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B-447

Steel Forgings, continued

Co., Memphis, Tenn.

"The possibility of lagging sales on the standard size cars due to the introduction of the American bantam size cars. At the present time, we do not have our normal share of this work." H. L. Heller, Vice President, Malloy Mfg. Co., Detroit

"Since we are dependent on the railroads, a realistic approach to solving obvious and acute car shortages in 1960 by the railroads will create a large volume of business with a sound economic purpose." F. M. Schaefer, President, Schaefer Equipment Co., Pittsburgh, Pa.

"Consumable electric melting and vacuum degassing." D. G. R. Brigg, General Sales Manager, Midvale-Heppenstall Co., Philadelphia.

"The ability to forge larger more complicated shapes from the super metals-which will make a most important contribution to our space program." C. A. Eagles, Assistant General Manager, Storms Drop Forging Co., Springfield, Mass.

"One of the major marketing problems will continue to be the transition in prime areas from highvolume, long-run production of aircraft, gas turbine and air-frame components to the customer parts required in lower volumes.

"Increased emphasis upon the application of high temperature and super alloys to critical commercial and industrial markets, and a keener evaluation of potential applications for all metals and alloys in these areas will be pursued.

"On the other hand, we anticipate that 1960 requirements for our commercial products in the automotive farm implement, heavy duty truck and tractor markets will be better than 1959." J. R. Carter, General Manager, Wyman-Gordon Co., Eastern Division, Worcester.

PRECISION PRODUCTION PROBLEMS?



NEW! ALIGNMENT INTERFEROMETER

Accurately measures small changes in angle over a range of 30 seconds of arc (±15 seconds). Easy direct scale readings to 0.2 seconds (0.000006").

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BENCH COMPARATOR

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Steel Foundries See Good Year

Most Customers Are Hoping for the Best

If the steel issue is settled and their customers are able to get into production, steel foundries will have a good year in 1960.

They are hoping there will be no rise in steel costs in order to keep their own prices in line.

■ Steel foundries expect to have a good sales and profit year in 1960. If the steel labor issue is settled they should have little trouble in realizing estimates they have set for the coming year.

During the last year, sales were well above 1958 and this trend should continue this year. Profits, too, took a good and steady upturn that helped erase the scars of the recession.

Eye on Steel — Steel foundrymen are closely watching the outcome of the steel negotiations and are hoping for a non-inflationary settlement. They want to keep costs as low as possible in order to hold a firm price line. In the face of competition from ductile iron and other casting industries, a firm price line at this time is very important.

By maintaining at least a fairly steady pricing level, sales are expected to rise about 12 pct in 1960, and profits about eight pct. Foundrymen say price increases this year should average about three pct.

Roadbuilding Important — Steel founders are also keeping their eye on highway construction programs. Many of their products are used in this type construction machine and cutbacks could affect them seriously. Another market they're watching is the development and expansion of pipe lines. A large amount of steel forgings are used in water, gas and oil lines and cutbacks here would have serious effects, too.

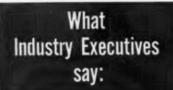
Publicizing new developments in the industry should help the marketing problem. This information is coming from the research department of the Steel Founders' Society and is being well accepted by the industry.

Process Expansion-Many mem-

bers of the industry feel this will save time and money spent in doing their own research and spread knowledge on advantages gained by properly designing steel castings.

Greater application of vacuum melting and shell molding processes will be seen this year. This will bring prices, costs and productivity into a more even line.

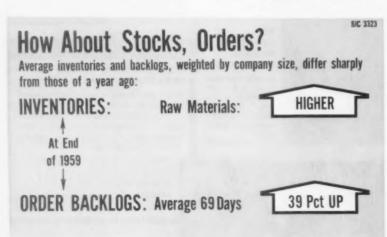
Order backlogs were extended to 69 days at the end of last year. This is in comparison to 49 days at the end of 1958.



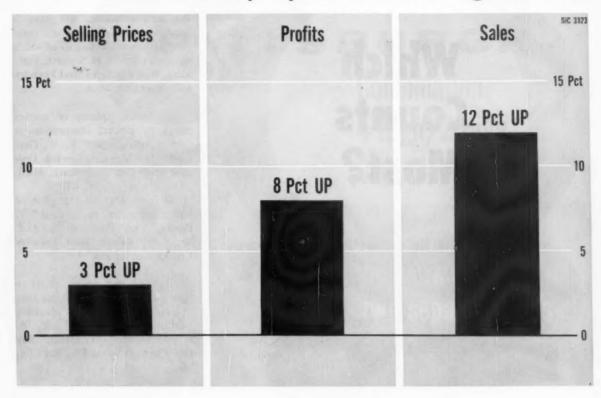
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Settling of the steel strike on a non-inflationary basis along with contract changes to eliminate 'featherbedding' and wildcat strikes." J. L. Campbell, Vice President, Sales, The Ohio Steel Foundry Co., Lima, Ohio.

"The tendency of the aircraft manufacturers to use precision castings made of steel is probably the most significant technical development in the future of our particular industry. Another development will be the substitution of ductile iron castings for many uses formerly of steel only. As to marketing problems, this industry will be again faced with increasing costs opposed to resistance to price increases." J.



With a Sharp Eye on Steel Negotiations



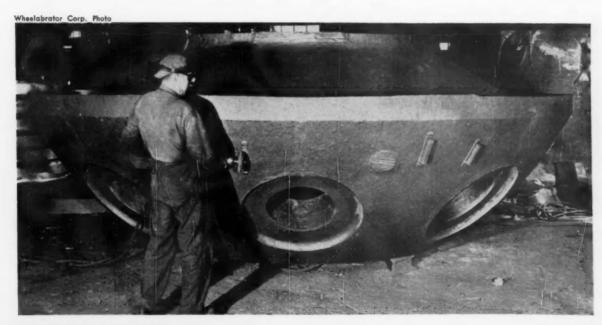
W. Cordes, Secretary - Treasurer, Los Angeles Steel Casting Co., Los Angeles, Calif.

"We produce steel castings and

transportation equipment. A significant percentage of our casting production goes to heavy earth moving equipment builders, and a major portion of our transportation equip-

ment goes to the producers of trucks and trailers. The highway building program, therefore, its ex-

Continued



THE IRON AGE, January 7, 1960

Which Counts

Most?



Cost... performance... safety features?
Usually it's all these, plus the solution of individual load and schedule requirements.

Atlas' 63 years of custom engineering, coupled with matching care in manufacturing, is your assurance of dependable service.

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ATLAS CAR & MFG. COMPANY

1140 IVANHOE ROAD CLEVELAND 10, OHIO Steel Foundries, continued

tent and timetable, will have a most important effect on our company and on the industries of which we are a part." J. R. Seyferth, President, West Michigan Steel Foundry Co., Muskegon, Mich.

"Continued squeeze of market prices by general competition in face of rising costs." E. W. Gerhard, Sales Manager, Swedish Crucible Steel Co., Hamtramck, Mich.

"Development and expansion of pipe lines; water, gas and oil." A. Darlin, Vice President & Asst. Secretary, Vulcan Steel Foundry Co., Oakland, Calif.

"We feel that further development of ductile irons will continue to have an adverse effect upon the steel castings industry." W. B. Ward, Secretary-Treasurer, Bay City Electric Casting Co., Bay City, Mich.

"The marketing problem will improve because of the continual release of information on casting design by both the research department of the steel founders' society and the foundry education foundation working in the engineering colleges with both students and professors on advantages gained by steel castings with proper design." C. P. Marguardren, Vice President & Treasurer, Pacific Steel Casting Co., Berkeley, Calif.

"Vacuum melting." E. Thys, President, Thys Co., Sacramento.

"Shell molding." A. Davis, Asst. to President, Electrocast Steel Foundry Co., Cicero, Ill.

"The buyers market will continue in 1960. Increases in prices of the large corporations will be accepted and the smaller companies will be encouraged not to raise prices." W. J. Shive, Vice President & Sales Manager, Sterling Steel Casting Co., Monsanto, Ill.



TSBURGH

Combination 4 High/2 High Cold Mill . . .

Does the work of two separate mills

are the words that best describe the new combination 2 High/4 High Cold Mill designed and built by PITTSBURGH to secure precision gauge, temper and finish for the ferrous and non-ferrous industries. As a 4 High Mill, it is used for cold reducing; as a 2 High Mill, it is used to acquire the desired temper and finish. Several desirable design features are incorporated to keep roll change time to a minimum. Low initial cost and economical operation are attractive plus values.

"Electric and open heart steel castings from 1 lb. to 100 tons"

HEAVY MACHINING FACILITIES

Our plant is equipped with a superior complement of well diversified machine tools that are available on a continuing basis for economical machining of heavy castings or the manufacture of auxiliary rolling mill equipment, such as heavy mill tables, furnace pushers, slab depilers, downcollers, ingot buggies, slab transfers, etc.



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Outlook for Welding Brightens

New Products and Developments Mean Better Sales

New products, improved processes, and the trend to automation will help boost sales and profits.

And the auto industry's new small cars have helped spur developments that will benefit others.

■ The manufacturers of welding equipment are counting on several developments to increase sales and profits in 1960: The continuing trend toward automation, and the introduction of smaller cars by the auto industry.

Labor costs in industry continue to go up and can best be offset by more efficient production techniques. In almost every case, this means more automation.

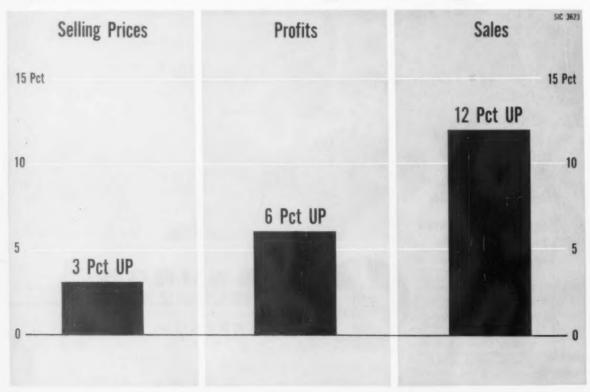
New Equipment Due — Each year, equipment makers have managed to come up with better and faster equipment, new materials, and new welding techniques. This year will be no exception.

Nearly 90 pct of the companies replying to this year's survey said they plan to introduce a new product this year. They look for basic improvements to metallic, inert gas shielded welding—particularly in the use of CO₂.

Small-Car Boom—New and improved arc-spot and burn-through types of equipment are also expected to be among the major developments. Improvements in welding rods for high temperature alloys and special alloys will also be made in the coming year.

The welding industry also sees the introduction of smaller cars by the auto industry as having a strong impact on their business. All of

Optimism Grows With Longer Backlogs



these new cars use a single welded structure for the frame and body. And the auto industry is planning to bring out more new small cars. In addition, it looks like it is only a matter of time before most of the larger cars will also be built with a single-welded structure.

Backlogs Climb—The small car programs have already forced welding equipment makers to find new and better ways of welding coated metals. These benefits are now available to other metalworkers.

With these developments in mind, the welding industry looks for sales to climb 12 pct above last year. Profits are expected to go up 6 pct. At the same time, it's warned that prices for welding equipment will likely go up 3 pct.

Prospects are already good that sales will at least hit the predicted level.

What Industry Executives say:

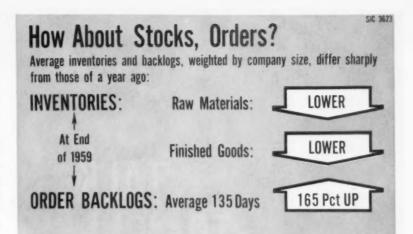
Q: "What technical development or marketing problem do you feel will have the most important effect on your industry during 1960?"

"Advances in automatic welding, and expanded use of welding in industry." C. B. Abel, Vice President-Sales, Miller Electric Mfg. Co., Appleton, Wis.

"Sales efficiency will be the key."
J. F. Lincoln, Chairman, Lincoln
Electric Co., Cleveland.

"High labor costs can be offset best by automatic vs. manual manufacturing, or automation. We're in that business!" T. S. Long, President, The Taylor-Winfield Corp., Warren, Ohio.

"More automation and continuous lines." R. N. Leitzel, Vice



President & Treasurer, Federal Machine & Welder Co., Warren, Ohio.

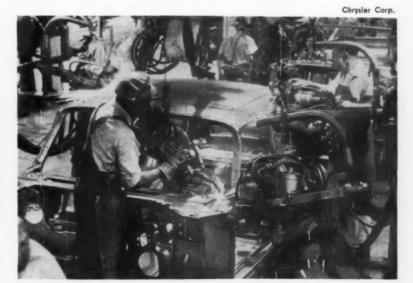
"Economic impact of strikes."
M. H. Potter, Vice President, Sales,
Marquette Mfg. Co., Minneapolis.

"We plan introduction of a new line of silicon rectifiers; new alloys of columbium metal; and new high temperature alloys." F. H. Driggs, President, Fansteel Metallurgical Corp., North Chicago, Ill.

"Impact of steel strike settlement terms, regarding automation effects on employment, will determine industry's time table in adopting new highly automated equipment. The green light to reduce manpower and eliminate feather bedding where justified by mechanization will create a tremendous new market for our specialized automatic machinery. Reluctance on the part of labor to accept this inevitable transition at this time will mean a stretch out of the time table commensurate with savings realized by reduced labor costs." B. E. Long, President, Cayuga Machine & Fabricating Co., Depew, N. Y.

"Basic improvements to metallic, inert gas shielded welding; particularly in use of CO₂. This, along with introduction of new and improved arc-spot and burn-through types of equipment will probably

Continued



THE IRON AGE, January 7, 1960



COPPER ALLOYS

Brass, Bronze and many others are stocked in the forms you use

Copper is a key item in the Whitehead line. We maintain large stocks of Copper in many different alloys, such as Tough Pitch Copper, Yellow Brass, Muntz Metal and Tempaloy. You can get these products to meet MIL, ASTM, or other standard specifications.

Stocks of well over 1000 sizes of rod, pipe and tube, almost 500 items of sheet, thousands of fasteners and even twelve different sizes of a specialty item like round telescopic brass tubing, make Whitehead a true "Supermarket" of Copper alloys—no matter what your requirements.

Since we stock all the principal corrosion resistant metals—Aluminum, Clad Metals, Monel, Inconel, Stainless Steel and Plastics, too—we can and do give unbiased opinions on the right material to do the job. Anytime you need anything in the corrosion resistant line, you'll find it pays to call Whitehead first. Interested in Specification Numbers as they apply to Copper Alloys? Write for Publication B-34D.



303 WEST 10th STREET, NEW YORK 14, N. Y.

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HARRISON, N. J. • CAMBRIDGE, MASS. • SYRACUSE
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have the greatest effect on our industry during 1960. Plasma jet cutting, spray coating and even welding developments may have an important effect, but its adoption by industry will be somewhat slower in the form of commercially available product lines." R. C. Lipps, Manager, Welding Dept., Westinghouse Electric Corp., Buffalo.

"The trend to mechanization will mean greater demand for fixture type equipment, less for standard items. The investment in more expensive fixtures will reduce operating costs for users of resistance welding. Another important trend is the growing use of coated steels, particularly in the automotive industry. While more durable, these materials are difficult to weld and we have had to develop new alloys for coated metal applications." W. K. Morga, Superintendent Welding Division, Mallory Metallurgical Co., Indianapolis, Ind.

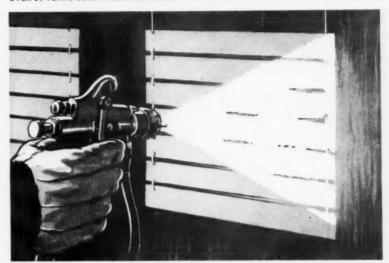
"We feel that our new 'micro wire' welding process will make a great impact on the metal working industry in 1960. This semi-automatic or fully-automatic process utilizes small diameter electrode wire operated at high current density in a CO2 shielding atmosphere. High speed and high operating factors are easily attainable. Thin steels can now be welded that were previously unweldable with conventional electrodes. Automated production as well as job shop work can take full advantage of the Hobart 'Micro Wire' process." W. H. Hobart, Jr., Vice President Hobart Brothers Co., Troy, Ohio.

"Nobody wants to buy a special machine that might not work right. Nobody wants to build one either.

"It's the buyer's choice—when he emphasizes price and delivery instead of engineering development, he's gambling his own profit." D. Sciaky, President, Sciaky Bros., Inc., Chicago. To avoid spray booth troubles

ask Oakite

OVER 50 YEARS CLEANING EXPERIENCE . OVER 250 SERVICE MEN . OVER 160 MATERIALS



Oakite curtain water treatment takes the "tack" out of overspray

Just a few inexpensive ounces of the right Oakite additive in the spray booth water curtain save hours of clean-up time. The reason: Oakite chemicals surround each droplet of paint with an "anti-stick" film that keeps spray from adhering to walls, pumps, lines and water nozzles. Paint that doesn't settle or float immediately will still wash through the system—but it won't stick, won't clog the sprays. The result: a water curtain without gaps, a smooth running system, no unplanned downtime.

There's a full line of Oakite water additives... one to match any of the countless paints, enamels and organic coatings. The right one will help paint sink to the sump... or float to the surface for skimming off... or overcome special hard water troubles... or combat foaming problems. What's your problem? Ask the Oakite man to make free tests in your paint spray booth. They won't interfere with production. They may save you hours of spray booth downtime. Bulletin F-9443 tells more. Write Oakite Products, Inc., 28A Rector St., New York 6, N. Y.

it PAYS to ask Oakite



How a TRAK-RAK Crane Can Save You Money BEFORE IT'S INSTALLED ..



And Pay For Itself in Time and Labor Savings After It Goes to Work!

Considering an addition to your present storage facilities-or planning construction of a new warehouse building? A TRAK-RAK Crane can save you money by permitting a sharp reduction in the overall size of the addition or building ... and still enable you to store the same volume or tonnage.

Hundreds of installations in warehouses and plants of every type are proof of the speed, efficiency, and economy of the TRAK-RAK System. A recent installation at Chandler Products Corporation, Cleveland, is a case in point.

> In an area of 20,000 sq. ft., 7500 coils (2,500,000 lbs.) are stored four high-using the floor and 3-tiered racks. The TRAK-RAK Crane handles the entire stock, from unloading coils at the rate of 1000 lbs. per minute from trucks, to moving them in and out of storage. Manpower savings of 70% . . . increased handling speed and safety . . . optimum rotation of stock . . . and a considerable reduction in warehousing costs are reported by the Company.

A TRAK-RAK Crane can be installed in your present warehouse area, enabling you to increase storage capacity, speed handling, and reduce costs. Why not write for details now?



TRAK-RAK Crane at truck unloading area. Unit unloads 1000 lbs. of coil stock per minute.



(III) CHICAGO TRAMRAIL CORPORATION

1312 SOUTH KOSTNER AVENUE CHICAGO 23, ILLINOIS

Estimated Steel Consumption 1959 and First Half '60

Special study introduces a new marketing tool for management.

Reports data by major 3-digit SIC metalworking industry groups. States covered account for 85 pct of total U. S. metalworking.

 Nearly all flat-rolled and bar steel require additional metalworking after leaving the mill or service center.

This working takes many forms: Stamping, welding, heat treating, washing, pickling, electroplating, grinding, polishing or buffing, painting, testing and many others.

Industries Differ — Further, the kind and degree of metalworking

varies from industry to industry. The automotive industries, for example, have more stamping and electroplating operations than the machinery makers. The latter use more forging, heat treating and grinding.

So, in assessing the market potentials for metalworking it is important to know: (1) The size of the market tonnagewise; (2) the kind of steel products that are consumed by various industries, and (3) their location geographically.

Data Are Delayed — While the U. S. Bureau of the Census publishes much data on metals consumption gathered in the "Census of Manufacturers," the data are usually several years after the fact. The 1958 consumption figures are

not yet available. Also, some of the census figures are withheld from the public by reason of their "confidential" nature—i.e., to avoid disclosure of information which might compromise any particular company's competitive position.

This series of tabulations show metalworking consumption of steel for 1959 in 15 states, with an estimate for the first half of 1960. The products covered all require additional metalworking before going into an end product for sale. There are other areas of steel consumption within these states—on-site construction, pipe lines, etc.—which are not shown.

No Single Source—The methods used in developing these tables involve use of information from many

How to Use These Tables

The type of information presented in these tables is one of the most widely used marketing tools in the industrial field. It was last available in 1957 as a study financed by the steel industry, and was based on the 1954 Census of Manufactures.

This is an entirely new study along the same lines covering six major steel products in the 15 states that account for about 85 pct of the U. S. metalworking industry. It shows consumption of these products by Standard Industrial Classification (SIC).

Used in conjunction with The IRON AGE quarterly surveys of capital appropriations, it can provide an additional forecasting tool.

The 1959 data, along with the first half 1960 forecast, can be a valuable market planning tool.

How can you use these data? Here are some suggested steps:

- 1. Code your company sales volume by SIC.
- 2. See what relationship exists between your sales to various industries (SIC) and consumption by these industries of the steel products shown here.
- 3. If the relationship is a close one, the steel consumption data can be used to spread the anticipated sales volume by states.
- 4. Since the data are forecast for 1960, companies finding a good 1959 correlation also can use it as a planning tool.

This can be particularly valuable for companies who know their industry's sales volume on a national basis, but have no breakdown by geographic areas.

Also, companies selling a major part of their output through distributors must develop secondary indicators of sales potential to guide them in planning. sources, plus application of simple statistical techniques.

An important data source is the American Iron and Steel Institute report showing direct mill shipments of steel products to various industries. This report (AIS-16) is issued quarterly and annually.

Census Data Help—A second source of useful data is the U. S. Bureau of the Census. These include metals consumption figures in the "Census of Manufacturers", the "Facts for Industry" series and other special publications.

A third valuable source of information is the large body of data published by trade and professional magazines, state directories and private surveys.

Computers Required—With the aid of the vast reservoir of data from the Census, AISI and other sources, the industrial configuration of each state is carefully coded, processed and recorded in detail on the most up-to-date electronic data processing devices.

As facts are reported for each industry, such as auto and appliance production, construction activities, etc., and these are correlated with actual material shipments figures reported by AISI and others. Again with the aid of electronic computers, material shipments are distributed among the various industries by SIC codes and by states.

Patterns Shift—Naturally, the actual end-item production and material shipments data are organized so as to reflect shifting patterns of consumption within each industry. These include both geographic and technological changes.

The tabulations of actual consumption during 1959 include steel receipts directly from mills, service centers and withdrawals from consumer inventories.

About the Estimates—The 1960 estimates are based on expected levels of production for each industry shown, provided the steel industry can supply enough steel to meet user needs.

Resumption of production by the mills will make this possible, but rebuilding of consumer inventories and service center stocks will continue.

About This Study

This survey was prepared especially for The IRON AGE by Herman B. Director Associates, Inc., Washington. The Director organization specializes in statistical and market planning data. Among its customers are some of the nation's principal metal producing and manufacturing concerns, including steel companies which account for more than 80 pct of total U. S. capacity.

CALIFORNIA Estimated consumption of six major steel products for 1959 and half of 1960, net tons

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CONNECTICUT Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

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INDIANA

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

	CONSUMING INDUSTRY	1959 (Yes	RBON PLATES IV) 1960 (6 Me.)	1959 (Year)	H.R. BARS 1960 (6 Ma.)	CARBON 1959 (Yea	HR SHEET & STRIP par) 1960 (6 Me)	1959 (Year)	RBON C.R. SHEET & STRIP 9 (Year) 1960 (6 Mo.)	GALVANIZED 1959 (Year)	1960 (6 Mo)	1959 (Year)	1960 (6 Mn
	Cutlery, tools and hardware	4 6	2 7	9 6	0	9 8	60	10	9	4 4 4 8	2669	779	8 8 8
	Heating and plumbing equipment	1 8 4	9 9	1.81	6	5 4 8	77 4	10	10	7 8 5	8 9 2	10	4 27
	Structural metal products	0	5 2 2 3	3 2 6 2	9	3 6 8	1962	5	6 7	4 9 2	0	23	W
-	Metal stamping and coating	0	370	301	1 9 6	4 6	2 5 6 5	8 8	40	2 20	6 0 1	3379	11
	Lighting fixtures	6 8	12	2 1 3	106	9 0 1	4 50	0 9	0 5	9 6	00	50	27
	Metal products, n.e.c.	8	4 8	3 2 8 3	10	7 3	1 4 9	0	20	57	0	m	
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	Tractors and farm machinery	4	23	60 00	100	2 8	1383	4 7	5 3	6 1	103	ni	**
-	Construction and mining machinery	373	8 9 2	7 50	4 0 3	2 9 4	126	2	3	10	4		
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-	Service and household machines	3 3	1 9 2	204	0	0	9 8 6	8	9 4	5 8 1	1	00	0
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-	Electrical industrial apparatus	62	6 3 3	006	4 0	0 0	7 30	30	9 9	0 4	OI	10	100
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-	Motorcycles and bicycles	K	0	0 4	* *	d	-	6 3	1 8	200	_	4 8	N

MARYLAND E

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

# # # # # # # # # # # # # # # # # # #	CONSUMING INDUSTRY	1859 (Year)	1960 (6 Me.)	1859 (Year)	H.R. BARS 1960 (6 Ma.)	1959 (Year)	R SHEET & STRIP 1960 (6 Me.)	CARBON C.R 1959 (Year)	S9 (Year) 1960 (6 Me.)	1959 (Year)	SHEET 160 (6	STAINLESS SHE 1959 (Year)	S SHEET & STRIP 1960 (6 Mo.)
International	Catlery, tools and hardware			7 8	47	40			4	0	,	10	61
A	Heating and plumbing equipment	20	10 10	1.4		8 6	7	3	1 6	P1	w	0 4	104
# desting	Structural metal products	2 2 2	8 3	0 2 2	10	3 3 6	5-	es.	6 9	41	BL)	14	61
### 48	Metal stamping and coating	2 2 1	4	3 0 9	0	4 8 7	9	1-	- 7 8	6.5	10	8 4	1-
### ### ### ### ### ### ### ### ### ##	Lighting fixtures												
######################################	Metal preducts, n.e.c.			1081	00 00	2 9 5	6 8 9	10	10	487	69	1 8	0 .:
120 120	Engines and turbines												
100 100	Tractors and farm machinery	m	0	1270	6 0	44	23	**		1 80	1 1 1		
100 100	Construction and mining machinery	63	4	50	163	475							
100 100	Metalworking machinery	10	9 9	0 0 0	2 2 2	42.3	SA	Mil	10	4 4	S EU		
10 10 10 10 10 10 10 10	Special-industry machinery, n.e.c.	5	63	100	7 9 3	44.3	17	~	40	2 2 4	1	0	61 61
A 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	General industrial machinery	0	4	2 2 2	0	-4	176	4	4	3 20 0	C	63	61
Main particular 12.99 12.90 12	Office and store machines			60	417	64				r)	62	6.2	
Mining parts 117 Mining parts 118 Mining	Service and household machines	cv	1-	205	0:		ru n	00	\$0	2 2 9	0 4 5	7 2	4 23
Apparatus 674 1237 1237 069 1237 1237 1237 1237 1237 1237 1237 1237	Miscellaneous machinery parts	11	ed	62	2 1							ed	**
14 O 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Electrical industrial apparatus	1-	14	60	EU EV	50	0 0	0	44	1 1 0	404	Om	
March Marc	Electrical appliances												
1048 1048 1058 1058 1408	Engine electrical equipment												
10 10 10 10 10 10 10 10	Communication equipment	4	4	9 6	61	2 6	1.40	40	W1	4 9 2	100	60	1. 7
218 2208 1325 937 140 144 206 762 457 188 1988 1988 1988 1988 1988 1988 1988	Motor vehicles and equipment	00	40	6 4	4	5	03	2-	4	21	0		
1000 1000 1000 1000 1000 1000 1000 100	Aircraft and parts	17	u)	1		1	0	2 6 5		136	8 9		
PODES REPORT OF THE PROPERTY O	Ships and boats	01	2 6	0	F1	10	10	4 4 51	12	7 6 2	4 5 7	0	0 11
MEN MANUAL PARAMENT BANDA PANDED TOURS NORTH MANUAL MANUAL PANDED ALVONO MANUAL PANDED ALVONO MANUAL PANDED PANDED ALVONO MANUAL PANDED	Metercycles and bicycles												
	TOTAL MARYLAND	2	6	0	0	0 2 2	2000	2 2	2 2 2 2	r)	6 0 2	9	9 5 6 5

MASSACHUSETTS

Estimated consumption of six major steel products for 1959 and half of 1960

were 12 5 4 1 1 5 4 4 1 1 5 5 4 1 1 5 5 4 1 1 5 5 4 1 1 5 5 5 5		1959 (Year) 1960 (6 Ma.)	1959 (Year) 1960 (6 Mo.)	1959 (Year) [960 (6 Mm.)	(458 (Year) 1960 (9 Mm.)	tar) (west in
A 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				2000	3 3	2170 130
total and a setting	V	4 4 0 0	- (4	4861 243	16
A 7 0 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	On In	206	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		833 925	60 00
Acting 1 0 2 2 2 3 4 0 5 7 4 0 5 7 7 5 7 7 7 7 7 7 7 7 7 7 7 7 9 9 3 3 7 7 7 7	-	300	6142 1437		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	15
thinery 4 0 3 4 0 3 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ø	20 20 20 20 20 20 20 20 20 20 20 20 20 2	7100 1111	0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 ·	000	0 2
1 2 2 5 4 0 90 4 0 90 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1069 53	5969 298	4963	100	8 7
threey 5 7 8 7 8 7 8 7 8 7 9 9 9 9 9 9 9 9 9 9 9	0	785 1693	348 404	2 0 0	4 .	
rchinery + 03	9 4 6	1 5 6 0	96 17	404	* * * * * * * * * * * * * * * * * * * *	4
g machinery 4 0 3	4	267 62	647 42	336	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
13 macriment 9	10	877 122	504 32	74	100	
			463 207	936 236	20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	0 0	000		0 4 7 5	954 117	9 0 0
Nery, R.e.C. 9 7 3	20	113	2000	0.00	030 61	2000
OA 11	0	578 214	000000000000000000000000000000000000000	24 A	0000	0
N	ч	160 8	307 16	15	7 000	20
achines 3 2 5	n	631 94	300000000000000000000000000000000000000	847 2485		8 0
4 0	8 4	200 72	572 34	344	0 1	
400	4	000	350 1041	116 2707	000	
The same same			4 4 0	1531 84	165	9 20
4	0	-		0 6 6	2 2	10
ment	9	103		104	67 33	0
		0000	100		80	*
0	0	003	197 261		200	71 2
	m	000	303	0 0		
30807	4 9	346	8 4 9 50	12 18	4	
8008	800		10 65	80	20 20 20 20 20 20 20 20 20 20 20 20 20 2	200
measurement 2.3.3	((C) () () () () () () () () (1000	1000	6878 4127	200	0
9 4 4 4				1 3 0 2	54411 31138	9372 33

MICHIGAN

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

### ### ### ### ### ### ### ### ### ##	CONSUMENC INDUSTRY	1959 (Yes	CARBON PLATES Year) 1988 15 Mis.)	CARBON) 1959 (Year)	I.R. BARS TBBD (6 Ma.)	CARBON M. 1959 (Year)	IR SHEET & STRIP	NO.	1960 (6 Ma.)	6AL)	SHEET BEG (B MA)	SS (V	
######################################			*		000	000	0 4	0192	6115	0 6	3 4 4	4	
10 10 10 10 10 10 10 10	Cutlery, tools and hardware	193	7 7 0	100	1 1	30	6	9 8 2 0	010	6 9 4	0 4 7	2	
100	leating and plumbing equipment	4	2 4 7	7 2 5	0 1	9 0	0	4 4 4 4 4	000	30 3	4 6 6	3 4 7	el
19 1 1 2 2 2 3 2 3 2 3 2 3 2 3 3 3 3 3 3 3	netal products	w	4 9 7 5	3 60	0	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0 4	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -		9 6	275	101	166
######################################	ping and coating	6.7	8 6 2	00 00	0 10	0 1	3 0	1 4 4	4 4 4	100	1.5	4	
######################################	bures		9	100	0.1	4 4	3 5	000	1 1 2	1 63	10	1	CA
######################################	icts, n.e.c.	1605	8 8	20	B .	00		4 1 6	0 4	4 8	0	m	
######################################	d turbines	6548	200	2 4	1 6 4	000	9 6	0 0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 9 2	4	el	
The color of the	id farm machinery	0	571	200	1 0 1	2 0	00	1 1	10	0	80		
THAT IN THE	construction and mining machinery	CI	1450	178	766	100	0 0		1 4 8 3	2 2 6	00	1 7	***
Thinks. 100000000000000000000000000000000000	etalworking machinery	4	2050	1 1 9	271	0 0	0 0	- 0	100	1 6 3	6	03	
##17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	dustry machinery, n.e.c.	66.1	305	4 0 4	4 (3)	0 0	0 1	10	10201	2	4	4	
4	seneral industrial machinery	0	4 2 3 7	879	1 2 7	0	4	0 1		0 0	10	CI	
######################################	store machines	6 9	17	9 9	13	0	91	2 1 2 2	1 1 1	400	2 9 0	10	
######################################	d household machines	4719	273	53	000	4 9 6	4 0	0 0	177	1 27	1 9	42	
######################################	ous machinery parts	5 8 2	E E	00	2	4 9 1	4	O I	. 4	0 1	el	10	
### 17 0 12 2 3 4 4 5 7 2 6 6 12 13 4 6 13 4 13 4	ndustrial apparatus	7 1 4 6	4 2 8	6	7 8	9	0	9	0 0	10	1	0	
ment 170 6 12136 77083 8839 1303 13034 7460 38409 38034 17034 1703 17034	appliances			4 3	50	00	4	9		. 0	10	N	
1223 170267 114079 6601990 4557353 1662530 11138995 3107134 2081780 514899 19835 284 15041 2025 658 7395 6658 1013 88 144 5059 132 444 15041 10 83 8 347 888 347 8089647 1371715 3693564 243777 244980 146864 668	ctrical equipment	9 5 4 4	572	2 1 3	62	10	0	0	9 4	1 10	10		
ment 170267 114079 680198 485733 1662530 1113889 3107134 7024 729 368 4 1 15047 19025 1107134 7074 708 708 708 708 708 708 708 708 708 708	ation equipment	1 2 3	7	204	1 23	2 8	17	7 7		4 8 8	583	8 4 2	10
t 15041 9025 547 2025 1013 692 14 53 32 52 total	icles and equipment	7 0	11407	80198	55733	66253	11388	1.071	4000	1 0	10	4 3	
Abloydes 17 10 83 595 64 38 54 20 13 19 10 10 10 10 10 10 10 10 10 10 10 10 10	d parts		1 2	547	274	202	0.	0	*	10	10		
typeles 17 10 83 50 47 28 347 208 18 18 18 18 18 18 18 18 18 18 18 18 18	boats	RE	902	10	OL.	0	n	u	4	E			
4 67642 289492 956187 617987 2089847 1371715 3693564 2437777 244980 146864 668	ulpment			-	6		60	4	O	0 8	1.8	1.5	
67642 289492 956187 617987 2089847 1371715 3693564 2437777 244980 146864 668	s and bicycles	17	1		0								
	CHIGAN	4 6 7 6 4 2	9 9 9 9	6187	17987	0 6 9 6 4	37171	69356	43777	4 4 9 8	10	0	4

MINNESOTA

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

CONSUMING INDUSTRY	(359 (Year)	N PLATES 1960 (6 Mo.)	1959 (Year)	1960 (6 Me.)	1959 (Year) 1960 (6 N	Me 1959 (Year) 196	ET & STRIP 1960 (6 Mg.)	1959 (Year) 19	BO (6	STAINLESS SHEET & S 1959 (Year) 1960	850 (6 Mg
Cutiery, tools and hardware	171	67	2356	2 4 2 4	1 1 1	6 6	(21)	10	75	4 5 4	1.
Heating and plumbing equipment			**	e4 62	1 624	0 10)(C)	1 7 8	0	7.9	-1
Structural metal products	0	0	10288	5658	612 58	106	(0)	0	10	280	11
Metal stamping and coating	4 4	0 0		576	6823 44	1380	88 4 1	200	8	376	-5
Lighting fixtures			4	**	20.00	+1		-4			
Metal products, ne.c.	77	N		4 60 12	50 10 50	15				71	
Engines and turbines	0	*		104	600 3	3 6	27	12	cu	10	13
Tractors and farm machinery	000	121		16136	283 138	14 60	63	0		72	rz
Construction and mining machinery	01	0	10	4 2 7 7	2879 18	**	S 8 5	O.	10	0	VO.
Metalworking machinery	50	T I		0 80 80	273	2 0	54	ru.	-		
Special-industry machinery, n.e.c.	10	O E		40	702	14	10	61	-	O	77
General industrial machinery	4	0		0 0 0	268 25	2 9 2 9	1-	0	-	14	10
Office and store machines	80	6.3		4 4 6	669	8 4 9 1 7	2-	4	103	40	19
Service and household machines	1870	2085	20 00 00	400	536 66	14 87	2 4 5 1			1399	0 8
Miscellanenis machinery narts	0	43		0,	7.0	24 45				CI	**
Flactrical industrial aggraphic	4	10	1 2 2 3	7 3 4	350 24	0 0	10	(2)	00	0 8	**
Electrical appliances				10	7.2	4	Q	107		62	94
Engine electrical equipment	2 %	03	308	1 6 5	119	tv	126			ca	
Communication souisment	P	60	3 80	2 1 7	500	4 4	0 00 00	\$13			
Motor vahicles and aminment	000	1-	7	476	7 5 4	2 4 4	4 4 6	cu			
Airpood and narte		- (4	0	60	5.4	-	2 7	10			
Character and pents		0		9 3	**	m	ın	+1	+1		
Rairoad equipment	7 6 0 4	4 0 0	2687	10 00 01	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		177	765	4 9.7	4 23	8
Matercycles and bicycles											
TOTAL MINNESOTA	S O A A.B.	46754	2 2 4	00 00 00 00 00	9145R 4361	0 10 0	2 8 8 2	42700	SEARA	2 3 0 0	63

MISSOURI

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

A Michael production of control o	8000	CONSUMING INDUSTRY	1959 (Year	BON PLATES 1) 1960 (6 Me.)	1959 (Year)	1960 (5 Mc.)	CARBON M.R 1959 (Year)	1960 (6 Ma.)	CARBON C.R. 1959 (Year)	RBOM C.R. SHEET & STRIP 9 (Year) 1960 (6 Mc.)	GALVANIZE 1959 (Year)	1960 (6 Me.)	STAINLESS SHI 1959 (Year)	1960 (6 Mo
Newtring and purphing and description and purphing approximate and purphing and purphing approximate and purphing and purphing approximate and purphing and purphing and purphing and purphing approximate and purphing an	01	Cutiery, tools and hardware	01	H	101	10 00	1 7	2 50	0 7	4 2 4	9	12	10	20
Microst interpreted and browning and control and		Heating and plumbing equipment	101	0 10	8	63	300	196	660	3 3 0	437	2 1 0	10	=
Microsoft stands 4 5 5		Structural metal products	6 9 7	173 174 175 175	783	0 8 6	2 6 9	1798	9 7 9	6 3 6	2 9 1	8 1 0	2	7 10
Upside littless Market M		Metal stamping and coating	4 5	2 0	7 1	4 6	4 21	275	8 4 5	5 4 9	8 6	5 5	0 1	All (5)
Midel protects and form machines 27 4 2 2 4 2 2 4 2 3 4 3 4 3 3 4 3 3 3		Lighting fixtures			20	13	04	00	2 9 9	9	2	m		
Engineer and furthermost 2	_	Metal preducts, n.e.c.		4	10	1 4 0	0	4 4 2	276	0 3	50	S		**
Trective and first matchine by 2		Engines and turbines	10	m	10	90	4 2	0	2	1.5	n	N		
Destitution and interpretation	-	Tractors and farm machinery	10	20.24	0 1	207	0 3	2 6 2	6 9	10	0 6	0		
Section indicative machinery 4 C C C C C C C C C C C C C C C C C C C	-	Construction and mining machinery	9 6	2 5 8	6 8	174	3 6	8 8	20	1	10	00	7	
Special inductivity machinety, as a first constraint of the c	-	Metalwerking machinery	4 6	85 85	4 2	53	0	30	100	n	4	N		
Other and Indeptities 1.1.4 4.8.6 1.0.1.2 1.0.1.2 1.0.2.3 1.0.2.4 1.0.	-	Special-industry machinery, n.e.c.	0	101	10	EU 44	0 0	4 8	9 9	4 1	4 7	(0)	0	0
Office and Numbershees 120 131 205 113 150 205 123 72 205 Section and Antennations and Antennations and Antennation and Antennations and Antennations and Antennations and Antennation and Antennation and Antennations and Antennation an		General Industrial machinery	*	4 3	6 8	101	3 3	2 0 2	30	13	2	0	10	n
Service and household machines 1504 604 1007 9 7079		Office and store machines	1		20	1 1	0 8	1 1	50	8 2	11	-	15	et
Miscinfavore machinery parts 101 205 422 205 319 317 319 317 319	_	Service and household machines	101	8 8	9 9	107	9	4 4 4	1 8	2 2 9	3 0	100	10	40
Electrical applications 4 4 2 2 2 6 5 3	-	Miscellaneous machinery parts	0	40	83	1 3	10	1 1	*	7	ed	1	m	(V
Exercise appliances Exercise appliances 50.3		Electrical industrial assarates	4	2 6 5	50	00	16	4 8 9	6	2 2 2	7 6	90	0	10
Engine electrical requirement 25 1 3 2 1 2 3 0 1 9 9 1 2 2 9 4 4 9 2 2 2 4 1 2 9 1 2		Electrical appliances			4	23	171	4 10	2 9	2 9 1	2 8	20	O.	0
Communication equipment 15 9 12 2 76 12 9 12 2 12 9 12 2 12 9 12 3 12 9		Engine electrical equipment		n	19	0 1	0	12	3 4	23	4			
Michael Mich		Communication equipment	in	m	1 2	7	0.	1 2	4	30	4	CV	ed	*4
Alverent and parts 3 5-4 2 12-4 30-2 12-4 59-0 59-2 59-2 55-6 427 21-4 59-0 58-4 16-8 58-8 58-8 58-8 58-8 58-8 58-8 58-8 5		Meter vehicles and equipment	6 7	50 51	4 3	497	973	1322	6 7	470	10	EV	0	17
Sings and beats 3540 2124 302 181 190 54 122 20 10 10 10 10 10 10 10 10 10 10 10 10 10		Aircraft and parts	6	04	8 2	2 4	1 1 8	9 0	e4 103	01	N	-	0	Oi
Relitand equipment 35501 23120 16040 10951 16196 10527 1281 833 3601 2341 51 81 81 81 81 81 81 81 81 81 81 81 81 81		Ships and boats	5 4	2 1 2	30	9 4	0	10	pr)	(V)	1	4	-	*4
Metersyches and Metersyches an		Railraad equipment	5 5 6	2 2 2	6 8 4	1095	6 1 9	1052	2 8	n	0 9	18	10	P
12845 66703 67185 40818 119472 71485 161774 96337 38537 33182 5527 32		Metercycles and bicycles	pri		en .	m	*	61	20	O.	N	216	cu	rd
		TOTAL MISSOURI	1 2 5 4	6 6 7 0	7 1 8	0 8 1	1 9 4 7	7 1 4 8	6177	6 3 3	101	0 11	(1)	64

Estimated consumption of six major steel products for 1959 and half of 1960, net tons. **NEW JERSEY**

3000	CONSUMING INDUSTRY	1959 (Year)	ION PLATES	1959 (Year)	H.R. BARS TREET (\$ 962.)	CARBON M.R. 1959 (Year)	SHEET & ST 1960 (6	CARBON C.R. SHI 1959 (Year)	SHEET & STRIP 1960 (6 Mg)	(SSB (Year)	ED SHEET 1960 (6 Ms.)	STAINLESS S 1959 (Year)	1968 (8 M
0 7 0	Parlace teals and headward		ØD.	0	0	00	1 8 5	-	5 52	IO	4 3	3686	2 2 1
2 10	Manhar and alcombine encirones	- 0	4	10	1.8	10	6 4		1057	4 3 5	7 1 7	5 6 8	2 8
1 4			2 4	0	1 9	0	2 6 6	-	2 2 2 2	4 3 5	8 8 9	1561	0
	Made of entraine and combine	0 0 0	1 1 1	100	9	0	9 6		1 9 8 2	3 0 4	1 9 8	3 3 8	20
	Liebbing firthings	4		2 2	10	10	1 9	- 40	4 9 7	9 8	4 3	1 9 8	0
10	Metal products, n.n.	40	0	100	0	7	1 9 9	8 4 7 5	2996	4 6	0	8 4 3	10
	Faging and furbings	1 10	10	0	10	17			el el	(V	d	1 2 4	7
100	Tractors and farm machinery	10	50	2 4	0	N	4		10	4 0	ed	80	
	Caestruction and mining machinery	9	20	2	2 6	10	1 6		10	8	IN.		
	Metalwarking machinery	2 4 2	4 5	8	1 0	6	9		7 6	1 1	40	23	el
10	Saecial-industry machinery, n.e.c.	6 4 7	8	9	0	10	10		408	10	0	8 2 9	4
10	General industrial machinery	4	0	3	0 9	04	1 2 1	13409	0 0 4	10	14	1105	9
1	Office and store machines	101	m	7 2	00	8	0 1		0 0	0	10	76	4
	Service and household machines	2 6	w	0	10	1	83		1720	1.4	1 4	1020	00
0 0	Miscellaneous machinery parts	4	7 0	2	20	4	0 10		2 4 0	4 4	0	339	20
	Fleetrical industrial annuratus	-	1 0	2 2	0	00	1 1 9		3049	4 1	6	808	4 51
	Electrical appliances	1	rd	0	10	-	et.		9 6	2	10	7 8	4
6 00	Engine electrical equipment	0	9	6 8	13	10	01		1 6 6	10	1 40	1 7	el
1 10	Cammunication equipment	10	0	4	2 2	2	7 00	30671	1061	101	4	20 20	in el
	Motor veticles and equipment	10	1	10	4	103	00		1747	4 4	0	133	a
104	Aircraft and parts	10	2 6	9	4	4	17		7 6	20	10	1915	0
m	Ships and boats	4 6	8 8	10	10	N	tu.		1 1	4 3	50	123	7
	Railroad equipment		2 9 9 4	1601	1042	1554	1010	1 2 5	8 2	2 4 50	(A)	9	
#1	Metercycles and bicycles												
	TOTAL NEW JERSEY	206619	120564	125313	73208	1	1436	390908	2 2 9 2 9 3	98468	5 5 6 6	13068	7 4

Estimated consumption of six major steel products for 1959 and half of 1960, net tons. **NEW YORK**

Contient, totals and hardware 1 1 1 1 1 1 1 1 1		1959 (Year)	1980 (6 Me.)	1959 (Year) 1965 it	Ma.)	1959 (Year)	1960 (6 964.)	(829 (FRRY)	1860 (6 Mo.)	1959 (Year)	960 (6 Me.)
ng equipment 1 2 3 1 7 9 9 9 9 9 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	6 5 8	2 7 3	6 4	2919	103	3 2 0	r\si	472	8	72	0
Secretaria 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0	2 1 4	3 7 3 2	10	101	5 5 0	0 1	006	0	2
1 caching 1 cach		8 8	100	3 5 7 4 5	10	189	50 5	8 4 3	10	23	4
F. C.	0 0	2 6	4 0 4	3867	1	9 6	277	9 4 1	6 1 1	4	0
6. 6 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20	000	104	6 2 2 4	(e	5 60	7 8 0	10	1	3 0	11
ining machinery 3 6 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 6	2 0 0	100	3084 3	0	6 8 9	0	10	9	0	el
Chinary STATE NACE NACE NACE NACE NACE NACE NACE NAC	1 0	4 4	8	2 6 1	10	10	0	2 8	4		10
Chinery 55 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9 0	2 2 2	1 0	4161	0	2 20	4 6	5 8	8 8	rv:	el
38C. 2712	2 4	0 0	2 0 8	4 8 9	H	1	77	=1	*		63
nec. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0	1 10	2 3	924	KY.	1 9	9 6	2 8	20	រណ	
2712	9 40	1 10	7 6	4887	m	7 2 0	4 3 2	55 50 50	4 2	10	1 7
200	P	1 2	4	9 6	1	20	1 3	00		+1	671
	0 0 0	8 8 2	0	6 2 4 2	19	797	0 8 8	3 3 3	1 8 2	4	13
7 4 3	16	7 8	1 8	7713 1	-	4 7 6	9 1 6	166	5 6	23	0 5
1 17 17	10	2	100	3 9 2 3	10	236	1 4 1	23	1 5	2	80
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Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

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Estimated consumption of six major steel products for 1959 and half of 1960

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CONSUMING INDUSTRY	utlery, tools and hardwar	ing a	tructural metal products	fetal stamping and coatin	ighting fixtures	letal products, n.e.	ngines and turbines	tors	truc	fetalworking machinery	stal-is	Iral h	Office and store machine	2 83	ellan	ectrical Industrial appar	lectrical		ommunication equipmen	otor vehicles and	ircraft and part	thips and bo	ailroad equipme	letorcycles and	11 .	
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EXAS

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

CONSUMING INDUSTRY	1959 (Year)	1960 (6 Me.)	CARBON 1959 (Year)	H.R. BARS 1960 (6 Ma)	CARBON H.R. 1859 (Year)	1980 (6 Me.)	CARBON C.R. 1959 (Year)	SMEET & STRIP 1960 (6 Ma.)	SALVANI 1959 (Year)	VANIZED SHEET ar) 1960 (6 Me.)	STAIMLESS SH 1959 (Year)	SHEET & STRII 1960 (6 MA
Cuttery, tools and hardware	60		60	eri eri	917		1349			0 0	0	1 1
Heating and plumbing equipment	O.	4	in	es	4 5 9 9		20		3 23	2 6 6	-	10
Structural metal products	93762	51569	20675	2 2 3 7 3	34478		29873		34346	1 6 8 9		0 10
Metal stamping and coating	2 7	75	7 5	7	2177		4 8		101	9	cs.	7 4
Lighting fixtures	O		1 3	2-	696		2 7		5	7	el	
Metal products, n.e.c.	10		10	101	23879		13005		80	139		co.
Engines and turbines	H	ri			1.4							
Tractors and farm machinery	5 8	3 7	297	0	3395		1349		4 8	161		
Construction and mining machinery	18106	7 6	4 1	100	21636		3200		63	2.4	4 3	C)
Metalwerking machinery	4 1	40	3 8	50	505		10 00		S	en	1 2	
Saecial-industry machinery, n.e.c.	80	100	176	0 5	3783		5531		1283	7 7	6 4 9	00
General industrial machinery	2022	1213	1178	7 0	5431		3583		20	9 1	1 5 5	04
Office and store machines												
Service and hassachaid machines		-	0	63	1218		8 2 6 0		7 2 1	4 3	1 9 6	4 6
Miscellaneous machinery parts	1 8	109	eu	KE'S	1 4 2 2		9 2 0		0	60	1 50	0.
Electrical industrial apparatus	369	2 23	000	2 3 4	464		1168		000	10	2	rt
Electrical appliances				- 60								
Engine electrical equipment	100	et	Ok.	n	n		101		1		N	
Communication equipment	3 2 7	0	0	1 0	506		1269		7 7 0	90	7	
Motor vehicles and equipment	4 2 4	2 8	7 7	13	5140		0096		163	10	3 8	64
Aircraft and parts	65	1 1	3	4	1459		636		9 es	2 6	2 6	-1
Ships and boats	14539	8723	1164	0	515		1 8 8		4 1 8	61	203	0
Railrad equipment Motorcycles and bicycles		0	-1	4	1.6	0		r4	n			
TOTAL TEXAS	1 3 2 6 0 2	7 58 1 4	64927	39587	112343	0 1 2 2	110455	67867	5 9 8 2	28697	10 10 10 10 10 10 10 10 10 10 10 10 10 1	2 2 2

WISCONSIN

Estimated consumption of six major steel products for 1959 and half of 1960, net tons.

CONCOUNT INFORMATION	1959 (Year)	3M PLATES 1960 (6 Mo.)	1959 (Year) 1960 (S Ma.)	1959 (Year)	SHEET & STRIP 1960 (6 Me.)	CARBON C.R. 1959 (Year)	SHEET & STRIP 1960 (6 Mo.)	GALVANIZED 1959 (Year)	1960 (6 Me.)	STAINLESS SH 1959 (Year)	1960 (6 M
Cattery, toels and hardware	40	cu	926	80	cA	397		65	2 3 3	eri.	1	20
Heating and plembing equations.		69	2 4 9	10	0	5 1 2		5 5 7	1 8 1	63	4	ev
Structural metal products		5272	222	572	3 1 8	0		5 8 4	4 2	17276	+4	-
Matel stacheng and pasting	24	10	4340	8 2 1	7	9 6 6		9 1 7	7 4 2	4	13	10
Lighting fixtures		10	368	184	10	1 6 8		4 2 2	27	367	602	4
Metal products, n.e.c.		1 2	758 3	21	et	5		4 2	S	1.4	10	m
Engines and turbines		4 1 4	2610 1	10	10	6 6 1		5 4 7	00		çú	01
Tractors and farm machinery	4	2272	2158 46	0	80	4 8 3		0 2 7	0	12357	12	el
Construction and mining machinery		3611	9956	4	2	0		1 2 5	0		m	0
Metalworking machinery	10	100	3684 2	CU	6	186		208	30	1 8 3	ri	el
Seecial-Industry machinery, n.e.c.	10	13.4.00	3533	1	4 2	2 50		386	0 7	1186	P	2
General industrial machinery	18919	1 1 3	8 4 6	10	35841	0		0 9	10	0 10 4	23	1 7
Office and store machines			2.7			H		13	C	1 2		
Service and household machines	3074	1 7 8	1 7 1 2	10	0	vo		636	60	4 2 4 8	N.	30
Miscellansous machinery parts			1 2 8		65	10		8	1	10	90	10
Flactrical industrial annacatus	7386	4 4 3	8 7 6 4	44	0	-		7 4 7	101	1519	0	N
Flactrical annihances			617	19	មា	00		1 6 3	00	2 2 9	(A	10
Facine electrical equipment			2 8 4	-	00	m		101	4 4	2 6 8		
Cheminand state equipment	cu	1.8	50		24	el	-	00	4	03		**
Motor vehicles and nowletent	20494	13731	362 61	0	91521			114599	0	2681	1209	8 1
Aircraft and parts			62							63		
Ships and boats		11652	1475	8 8 3	467	0		10	3 8	2 2 0	0.	C)
Railroad equipment Metorcycles and bicycles	101 101	N 4	1260	756	1604	64	11797	7070	1024	6 1 4	2 2 8	0.
TOTAL WISCONSIN	277101	167359	519 169	0.0	0	64		395599	9	58579	1	1008

How Ralph Hockett increased diamond wheel life 72%

If ever a man was a perfectionist, that man is Glenn Carr, General Foreman of the Tool Grinding Department at the Wichita Division of the Boeing Airplane Company. And, after fifteen years of working to the kind of tolerances required by the world's leading builder of superbombers, he tends to be skeptical of miraculous claims.

That's why Ralph Hockett of Bay State distributor Wichita Pump & Supply Co., didn't make much fuss about Bay State's new diamond wheels. He analyzed the problem in his usual fact-finding manner, submitted wheels for test and let them speak for themselves.

The result was an eye-opener. The pay-off was in wheel life. Against an average life of 125 hours previously, the new Bay State wheels averaged 215 hours per wheel!

One important factor contributing to this bonus wheel life was the use of Bay State's unique BA Resinoid bond.

The Bay State wheels were not only longer-lasting but they were more versatile, cooler cutting and gave a far superior finish. They are now, of course, a regular inventory item at Boeing, Wichita, where B-52 missile bombers are in production for the Air Force.

If you have a diamond-wheel grinding problem, you'll find that your Bay State representative, direct or distributor, is ready to supply the right wheel for the job with either natural or man-made diamond abrasive...and he may well be able to give you a significant improvement in performance, too. Better grinding at lower cost... that is his business.



at BOEING WICHITA



BAY STÁTE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.

In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.

Branch Offices: Chicago, Cleveland, Detroit, Pittsburgh, Los Angeles. Distributors: All principal cities.

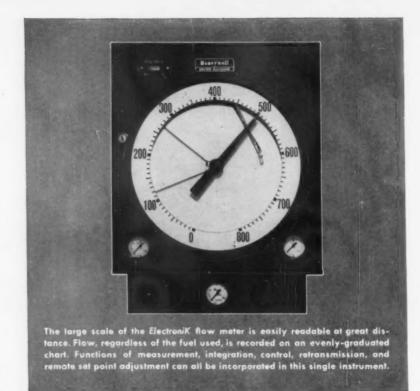
use these accessories with the Electronik flow meter



Area type electric flow transmitter for measurement of the flow of oil, tar, pitch or other viscous fluids.



Ledoux bell type electric meter body for measuring atomizing steam flow.





Bell type electric meter body for measurement of air or gas flow.



Honeywell diaphragm control valves for fuel, air and steam flows.

Electronik flow meter lets you switch fuels without upsetting fuel-air ratio

. . . records, indicates, integrates, controls and transmits

Use the highly versatile, accurate ElectroniK flow meter to save fuel dollars and improve operating efficiency in combined fuel systems. It's calibrated for both gas flow and equivalent oil flow, and automatically proportions the input of each type of fuel on the basis of total Btu input required at the furnace.

The ElectroniK flow meter operates on the induction bridge principle, for highest accuracy. For freedom from vibration effects, pen and pointer are positioned by the dependable Brown balancing motor and amplifier used in all ElectroniK instruments.

The meter can be supplied with an adjustable Indexet unit by which the set point can be established from a remote point-manually, by a pneumatic loading station, or automatically, by another instrument. Indexet also provides the wide span and zero adjustments needed to "tune" the instrument to the process with extreme precision.

Other options, such as a re-transmitting slidewire or pneumatic transmission unit, adapt the ElectroniK flow meter to a variety of interlocked systems. The flow transmission system permits remote location of the meter.

Get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

PIONEERING THE FUTURE EAR

Honeywell

"Soaring '60's": What Business Can Expect in Next Decade

By Dr. H. T. Hovde, Vice President-Treasurer, Coordinated Marketing-Management Corp., New York

Business will trend steadily upward in the next decade.

The economy will pass the \$500-billion mark late this year. And it may hit \$700-billion by 1970.

But progress will be marked by changing market patterns. Here is a studied forecast for the next ten years. With traditional forecasts for the New Year behind us, a longer look may sober the champagne optimism about the size — and shape — of things to come.

Can our economy continue the postwar pace?

Will the road lead to the Golden Sixties?

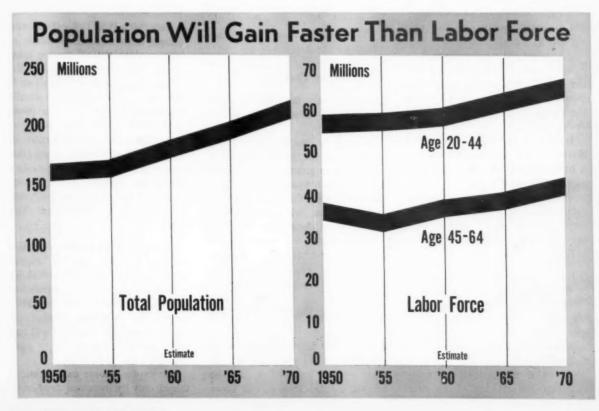
Is the glitter mere fool's gold, or real nuggets?

How you look ahead, and what

you do about the problems to be faced in the soaring—but critical—1960's will determine your position in the metalworking industry.

No Magic Numbers—At the outset, let's state it bluntly. There is no magic in numbers. If population grows—as it surely will, you've got it made in marketing opportunities.

Production factors are favorable. But market potentials are open to





Dr. Howard T. Hovde

No Ready-Made Market in '60's

In this article Dr. Howard T. Hovde is less concerned about a precise forecast than in the scope of business problems facing management.

As he sees it, the 1960's provide no ready-made market, but an opportunity for order-makers, not order-takers.

While he may be more interested in the broader picture, his forecasts have a way of working out. In his April 17, 1958, article for The IRON AGE he accurately forecast the 1959 upturn.

Headed AMA—Dr. Hovde is a past national president of the American Marketing Assn., formerly a faculty member of U. of P's Wharton School.

He is now vice president-treasurer of The Coordinated Marketing-Management Corp., an affiliation of specialists in management, marketing and applied economics.

Charts and tables for these forecasts were prepared in cooperation with L. D. Colburn, a former colleague, now president of the Economic Forecasting Institute, Inc.

others—here and abroad. The next decade will be highly competitive— a business era of "hard sell."

Profits—never assured—may be even harder to come by.

Slow Start—Lower business activity during the second half of 1959 upset the running start expected for the opening months of the new decade.

Effects of the steel strike will be felt throughout the winter and into the spring. Widespread hopes that business would leap to new highs at the outset of 1960 were doomed to disappointment.

It is now likely that the United States will not approach the start of a half-trillion dollar economy until sometime later this year.

In 1959, the Gross National Product moved up to 485 billion dollars in the second quarter, only to fall back because of the steel strike.

Enter New Stage—Crossing the 500-billion dollar line will mean more than a statistical event in our history. It will mean that the American economy has reached a new and exciting stage, but at the same time a dangerous phase.

To trend the outlook continuously upward in each of the next ten years is misleading. Only the direction is a straight line—not the course of intermediate events.

Progress cuts downward—as well as upward—in its saw-toothed effect on the economy. If not strikes, then other factors, will deter progress as the economy spurts ahead and halts at intervals during the next decade.

Where we have been determines where we are going.

Population Outlook

People make markets—but only people with money in pocket to spend.

Groups of people make better markets for the metalworking industry. These groups are the household—a family under one roof, business—an entity that both produces and consumes, and government—federal, state, local, and foreign.

If, suddenly, the stork stopped bringing children into American homes, there would still be a big metalworking industry during the next ten years. It is among persons now born that the industry will rely on volume.

Population Explosion — Birth to bride and bridegroom averages 21 years. New households, to be formed in the 1960's, will come

from children born between 1939 and 1949. The population explosion in the United States started after the war.

Therefore, 21 years later, marriages in the first half of the 1960's will be about half of what may be expected in the second half.

Late '60's Will Tell—If the next decade is to earn the accolade of "the soaring 1960's," the big take-off is 1967, followed by a fairly stable plateau until the next rise in the 1970's. The pattern of family formations indicates a lesser boom in the early 1960's than later.

Assuming the level of fertility of recent years, the United States population will rise about 34 million during the next ten years, an increase not quite 2 pct per year, but by 1970 nearly a fifth larger than today.

Changing Work Force — Change in age structure has an impact upon business. Among nonworking youngsters and oldsters, population will increase faster than the labor force. The potential number of workers gainfully employed will rise about one-sixth compared to one-fifth for total population.

Per capita income can be maintained only by increased productivity. Further gains in productivity are necessary over and above the disparity in age groups to support more educational facilities and public services demanded by population growth.

Factory Jobs Steady — Employment opportunities will increase in distribution and services both by private industry and government, rather than in manufacturing.

This continues a trend of the past ten years, which has shown factory employment remaining constant in the face of a one-third rise in industrial production.

During the decade, households will grow at about the same rate as population increases. However, anticipated marriages are greater toward the end. Thus, accelerated demand for housing and household items will be gradual.

Meanwhile, housing, as an example, has temporarily passed the peak of new starts. The demand in the early years will remain fairly constant. The replacement market for household items, nevertheless, will continue the upward trend throughout the decade.

More New Companies—Business firms now operating in the United States exceed 4.6 million, an increase of 60,000 per year since 1950. A steady growth of firms will produce more goods and services, but not always in the same business lines.

Manufacturing firms, in numbers, account for only 8 pct of American companies. Fabricated metals, for example, including ordnance and accessories represent 27,000 business firms as a basic industry.

Metalworking companies are less likely to increase in number of firms than the increase in the total during the 1960's. But both dollar volume and unit production will increase among existing metalworking firms.

Government Markets—The government market for metal products will show a growth rate in line with population growth. Needs of federal, state, and local political units cannot reasonably be expected to reduce

expenditures over the long-run period.

If defense needs drop off, the same or increasing expenditures will most likely be transferred to peacetime projects.

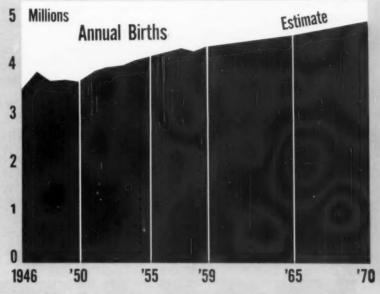
Bigger Tax Bites? — The mixed blessing of the government market is apparent. Purchases by government-directed projects are invariably offset by the tax burden that

supports business selling to government.

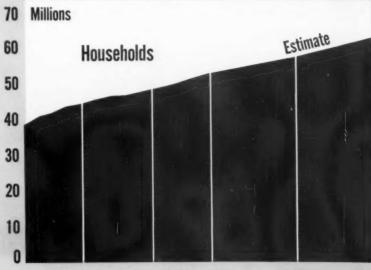
Total taxes now exceed a quarter of national income. The inflationary tendency mounts with each added tax increment to support the government market for more and more projects and services.

The question arises as to how much production output and income the government will take during the

As Birth Rate Goes Up...



So Will Family Buying



decade and its effect upon prices.

Economic Growth

The "numbers game" has been applied to national growth by politicians, economists, and forecasters. Take any number between 1 and 9; the odds of late, seem to favor the larger because of economic ambition larded with propaganda.

Uneven Growth—Picking a number for probable growth in the 1960's is like pinning a tail to the donkey. The blind-fold choice points in a direction—called "growth"—demonstrated from the past.

Our recent past shows uneven growth. Using a constant dollar series for the gross national product, the annual rate has ranged upward to nearly 9 pct for a one-year period between 1949 to 1950, to a shrinkage of about 3 pct between 1957 and 1958.

The annual average over the past decade remains close to 3 pct, a one-third increase for the decade.

Inflation's Effects—If the changes in growth are related to the consumer price index, the measure in current dollars is exaggerated by inflation. The shrinkage of current dollars in terms of prewar dollars is obvious.

Because of the inflation spurt after the war, inflation averaged over 3 pct per year for the past twenty years and about 2 pct per year for the past ten years.

By price manipulation, a growth rate may correspond to a desired dollar figure and not yield any more real goods and services.

Need Faster Growth—The case against forced growth or a specific growth target is not a case against faster growth. There apparently is wide agreement that there should be faster growth with endorsement of Federal aid.

The whole question of national growth was brought into sharp focus by Mr. Khrushchev when he asserted that the Soviet Union would out-produce us by 1970.

Free World Competition

What about competition from within the Free World?

The past year has seen each inroads from European and Japanese production that it again raises the question of protective tariffs and quotas.

Outside the United States, foreign labor receives as little as 10 cents upward to 40 cents for every dollar paid to American workmen. Higher wage scales make for higher purchasing power only in domestic trade.

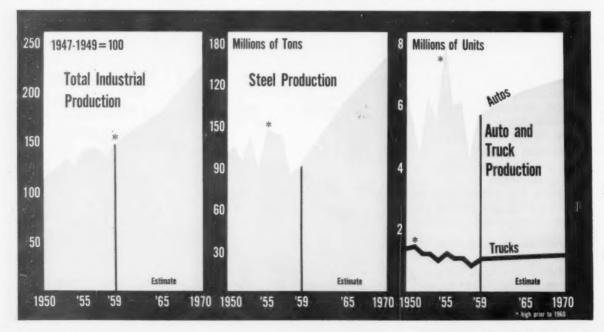
U. S. Shut Out—The U. S. economy lends heavily on labor income compared to capital income. The share of wages and salaries now paid equals 70 pct of our national income as against 65 pct in 1939.

Other income shares—such as proprietors' income, dividends, rentals, and interest—are proportionately lower than prewar.

Discounting the fear of Russian competition, the Free World markets are rapidly closing doors to American products. The vigorous economic comeback abroad has raised consumption and increased foreign restrictions to American products.

ECM Restrictions—In the European Common Market, the six member nations are planning as

Ten-Year Outlook for Production, Steel, Autos



early as 1965 the speed-up of an economic community, now 170 million persons, with no trade barriers among them. Under the present schedule this will not come about until 1970 to 1973.

Tariffs from imports to the European Common Market would be slightly lower for food stuffs and raw materials. But manufactured products from the United States will, on average, be higher. The net effect will be further restrictions on U. S. exports of metal products.

New Trading Bloc—A second Western European trading bloc became a reality when the so-called Outer Seven countries established the European Free Trade Association last November.

Like the European Common Market, dropping of trade barriers among these countries would be accomplished by 1970. But an earlier step might be taken to incorporate all eighteen countries into a single free-trade bloc among themselves.

Products have no nationality. Within economic blocs, either in being or planned the foreign consumer attitude is that American products are no better, but more expensive.

The European businessman is not afraid of American competition. Foreign governments are anxious to attract investment.

Higher U. S. Imports — During the 1960's more goods, formerly exported from the United States, will be made abroad. Some of this production will return to American shores and be consumed here to the detriment of American-based manufacturers.

This directs attention to some fundamental problems, including long-term growth, to be brought into sharper focus as the Free World economy outside the United States moves ahead.

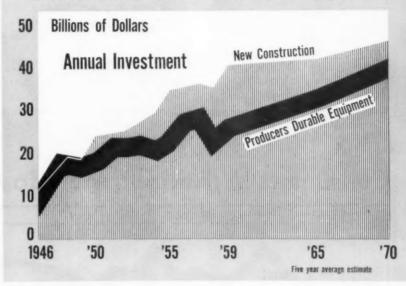
Production Outlook

Despite these unfavorable factors, U. S. production of goods and ser-

GNP Heads for \$700 Billion...



But Durables Will Rise Faster



vices will rise not less than a third in the next ten years.

With incentives for faster growth, it is reasonable to assume that our economy will be operating 40 pct higher.

This means that the gross national product, which is expected to cross the half trillion mark later this year, will approach \$700 billion by 1970.

Industrial production, measured by the Federal Reserve Board Index (1947-49 = 100), would rise from a level now about 150 to 225. Changes in FRB Index — The FRB Index is trended at a growth rate higher than the GNP. The index recently was readjusted by the Federal Reserve Bank. Revised figures (not shown here) are up about 10 pct.

As with all historical data, there was need for realignment because of new products and new developments within our economy.

Component parts within the old Index have shown growth rates disproportionate to the Federal Reserve Board Index as a whole.

Steel Outlook—Steel production, despite wide fluctuations, will probably rise from the 1955 high of 117 million tons to 138 million tons in the mid-1960's and to 169 million tons by 1970.

Users of steel will vary by product lines. Automobile manufacturers because of competitive conditions may have some difficulty maintaining passenger car output above 6.5 million cars a year in 1965 and 6.9 million by 1970.

Likewise, trucks, because of competitive means of transportation and the nature of hauls, may be limited to production between 1.1 million and 1.2 million in the various years ahead.

Changing Markets—If steel shipments to the automotive industry remain fairly constant the historical pattern of roughly one-sixth of steel production going to the automobile industry will drop in relation to the rising total steel market.

More and more steel has been used for containers, construction, contractors' products, and electrical machinery and equipment in recent years. These industries probably will continue to absorb a large percentage of steel production in the future.

Steel tonnage has proportionately decreased for rail transportation. This market is unlikely to again take as large a part of total steel production. Agricultural equipment users of steel face further declines because of crop surpluses which cannot continue at the rate of recent years.

New Plants Come Later—Opportunity for growth is probably greater in the area of producers' durable equipment than in the field of new construction during the 1960's.

The annual investment in new construction will continue heavy, rising from its present level to \$42 billion in 1965 and \$46.5 billion by 1970. Percentagewise, the rise is less than the GNP rate.

The immediate need for new plant and residential construction awaits a sharper rise in production output and population growth later in the decade. Durables Will Spurt—Demand for producers' durable equipment should rise sharply throughout the next ten years, and at a rate greater than the Gross National Product.

The annual investment in producers' durable goods is forecast to reach \$33 billion in 1965 and \$40 billion by 1970. This is in contrast to an estimated \$26 billion for 1959.

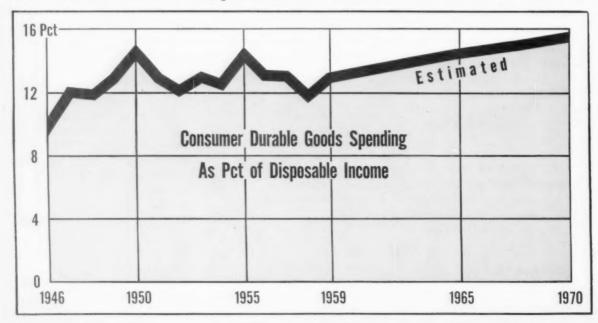
Personal Spending—With the upward pressure to pay more wages and to reduce costs by labor-saving equipment, the living standards during the decade will furnish an additional market for the metalworking industry.

Personal consumption expenditures recently have exceeded \$300 billion a year. That is a whoppin' lot of shoppin' even for the smaller share that goes to metal products.

Metalworking industries that rely on growth in consumer durable goods will prosper during the decade.

Within the past ten years the percentage of disposable personal income paid out as consumer expenditures for durable goods has

Consumers Will Spend More to Make Life Easier



ranged between 12 and 14 pct. Only in the years 1950 and 1955 were these top limits exceeded.

Adjust Policies—The percentage of consumer expenditures for durable goods is likely to climb to 14.5 pct in 1965 and reach 15.5 pct by 1970. Like manufacturers' investment in producers goods, the consumer, too, faces higher requirements for mechanical aids in his daily living.

In sum, L. D. Colburn, President of the Economic Forecasting Institute, who collaborated in preparing these forecasts, expresses this opinion:

"During the decade of the 1960's, economic activity in the United States is likely to fluctuate with greater magnitude and changes are likely to be more rapid than in the post World War II period. Thus, the individual firm and each industry will need to adjust policies more quickly to meet changes in economic conditions—if they are to maintain their proportion of the total market."

Profit Outlook

There is truth in the wise-crack



AUTO TARGET: Output may hit 6.9 million by 1970. Ford photo.

that profit—not prophets—foretells the future.

Buying plant and equipment is essentially a long-term forecast, usually for the period of permissible tax write-off. The useful project life for capital investment, because of technical obsolescence, is shorter than the wear-out rate. Somewhere between extremes, a judgment is made as to pay-off.

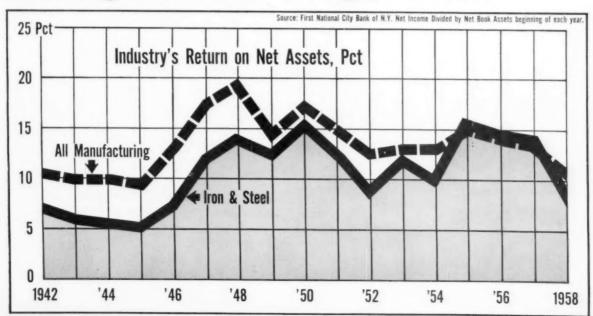
Look to '70's—Part of the 1960's growth was anticipated when productive capacity was expanded over the last ten-year period.

From 1946 through 1958 outlays by U. S. business for new plant and equipment amounted \$336 billion. Additional capacity to be added in the next ten years depends not only on high level activity but further growth into the 1970's.

Economic welfare depends to a large degree upon the amount invested in expanding the output of goods and services.

Have returns been commensurate with investments? Are anticipated

Declining Profits Call For Higher Volume





PLANT SPENDING: To meet rising costs industry will invest heavily in more efficient equipment. Spend-

ing for producers' durable may reach \$40 billion yearly in 1970. Westinghouse photo.

profits adequate to induce new investment at a rate equal to, or faster, than in the past?

Big Capital Investment—Historical data may not fit conditions in the 1960's, but, at least, are guide posts.

Since 1945, American industry has put on the books at rising price levels a tremendous capital investment which has broadened the capital base and helped to narrow the discrepancy between book values and real values.

A measure of book net assets (also called "net worth," "capital and surplus," or "shareholders' equity") is provided in the annual compilation by the First National City Bank of New York. The chart on p. 299 shows the pct return of net assets on net returns from 1942 through 1958.

Lower Profit Trend—Excluding abnormal depression and war years, high returns encouraged high investment and helped generate the capital necessary for normal expansion.

Target returns in excess of 20 pct encourage new industry, but the average manufacturer never reaches this target.

Except for three years, the iron and steel industry netted less than the average of all manufacturing. Returns for the somewhat higher

years of 1955 to 1957 were not exorbitant.

Economic, social and political conditions outside the control of management weigh heavily on business success or failure. The declining profit trend during the 1950's would lead to an assumption that the percent of returns on net assets for the average manufacturing firm will be about 10 pct during the 1960's.

Need Higher Volume—If so, the conclusion is inescapable. More gross dollars in sales will be needed to support capital expansion in the 1960's. This can come about only through increased volume.

To increase production industry will need to invest heavily in more modern and more efficient machinery.

Crisis Ahead?—The years ahead may generate a financial crisis, particularly if price inflation continues unchecked.

Inflation, while a political consideration, has not entirely been held back by government policy since some short-sighted businessmen favor inventory profits over conversion profits in the manufacture and sale of goods.

Earnings Drop—If price inflation continues, many serious problems confront industry to keep plant and equipment modern and install new capacity to meet future needs.

The Competitive 1960's

Contrary to popular opinion, no ready-made market lies ahead. The 1960 decade provides only opportunities for order-makers not order-takers.

What new developments will affect the metalworking industry? These are yet to be discovered in the laboratory of research and development. Routine activities in the heavy goods industries are likely to adhere to a slower growth rate than new industries which furnish new competition.

Apply Marketing Concept — To grasp fully the opportunity of the decade, management will lean heavily on a business philosophy known as the "marketing concept."

The role of hunch has given way to rational, analytical planning.

Managerial decisions during the 1960's will lean heavily toward the marketing-management phases of business while adhering closely to problems of lower production costs and forward financial planning.

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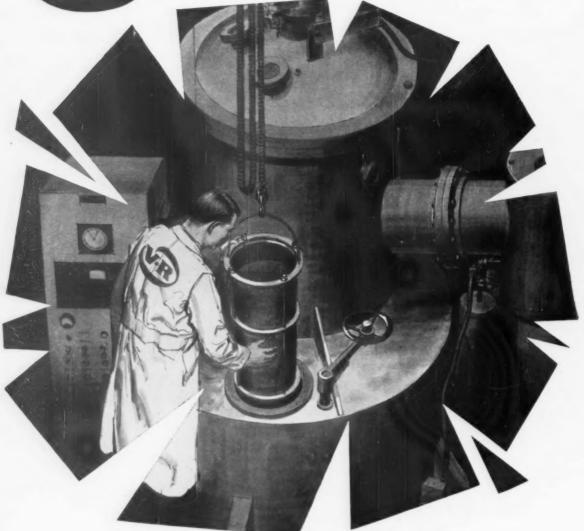
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VASCOLOY: RAMET

808 MARKET STREET

WAUKEGAN, ILLINOIS

Price and Production Data

as of January 7, 1960

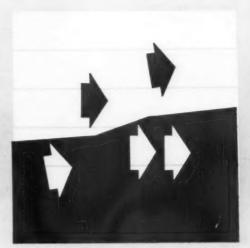
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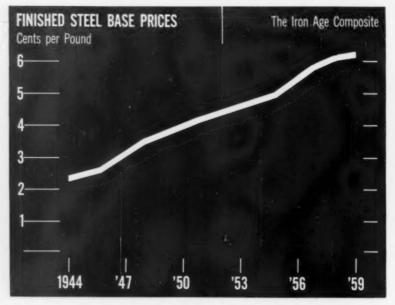
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Steel Prices, **Production**





THE IRON AGE FINISHED STEEL COMPOSITE PRICE

Current Series, 1935 to 1958, Cents Per Pound

	1936	1937	1938	1939	1940°	1945*	1946	1947	1948	1949
Jan.	2.076	2.323	2.584	2.354	2.305	2.412	2.464	2.877	3.193	3.720
Feb.	2.065	2.323	2.581	2.354	2.305	2.427	2.555	2.884	3.215	3.719
Mar.	2.055	2.532	2.578	2.354	2.305	2.432	2.719	2.884	3.241	3.715
Apr.	2.062	2.584	2.578	2.354	2.267	2.433	2.719	2.884	3.241	3.709
May	2.062	2.584	2.569	2.308	2.305	2.436	2.719	2.884	3.214	3.706
June	2.007	2.584	2.513	2.283	2.305	2.464	2.719	2.884	3.211	3.705
July	2.130	2.584	2.359	2.283	2.365	2.464	2.719	2.914	3.293	3.705
Aug.	2.139	2.584	2.350	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Sept.	1.146	2.584	2.357	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Oct.	2.172	2.584	2.320	2.283	2.305	2.464	2.719	3.193	3.720	3.705
Nov	2.172	2.584	2.354	2.268	2.305	2.464	2.719	3.193	3.720	3.705
Dec. Average	2.283	2.584	2.354	2.305	2.305	2.464	2.747	3.193	3.720	3.756
Attrage	6.110	2.000	2.400	2.011	2.302	2.440	2.000	3.014	3.434	3./13
	1950	1951	1952	1983	1954	1955	1956	1957	1958	1959
Jan.	3.837	4.131	4.131	4.376	4.534	4.797	5.174	5.622	5.967	6.196
Feb.	3.837	4.131	4.131	4.376	4.634	4.797	5.174	5.649	5.967	6.196
Mar.	3.837	4.131	4.131	4.376	4.634	4.797	5.179	5.666	5.967	6.196
Apr.	3.837	4.131	4.131	4.376	4.634	4.797	5.179	5.670	5.967	6.196
May	3.837	4.131	4.131	4.393	4.634	4.797	5.179	5.670	5.967	6.196
June	3.837	4.131	4.131	4.517	4.634	4.797	5.179	5.670	5.967	6.196
July	3,837	4.131	4.180	4.634	4.789	5.081	5.179	5.818	5.967	6.196
Aug.	3.837	4.131	4.376	4.634	4.801	5.174	5.560	5.967	6.175	6.196
Sept.	3.837	4,131	4.376	4.634	4.801	5.174	5.622	5.967	6.194	6.196
Oct.	3.837	4.131	4.376	4.834	4.798	5.174	5.622	5.967	6.196	6.196
Nov.	3.837	4.131	4.376	4.633	4.797	5.174	5.622	5.967	6.196	6.196
Dec.	4.131	4.131	4.376	4.633	4.797	5.174	5.622	5.967	6.196	6.196
Average	3.862	4.131	4.237	4.518	4.716	4.977	5.358	5.800	6.060	6.196

^{* 1941-1944} inclusive: 2.396.

THE IRON AGE finished steel composite price is a weighted average of the base prices of 10 major steel products which account for the majority of finished steel shipments. It is weighted by the percentage that each of these products is to total finished steel shipments during the base period. With the base constant, the only changes in the composite from 1929 through 1940 or from 1941 through 1959 occur when one or more steel products prices were changed.

In the composite shown here there are two base periods. For the years 1981 through 1940 the base is finished steel shipments for 1929-1939 inclusive. For 1941 through 1959 the base is finished steel shipments for the 7 years 1987 to 1940 inclusive and 1946 to 1948 inclusive. Two base periods are used because of basic changes in the shipment pattern in the 20 years covered. In each case the products remain the same. They are hot-rolled bars, structural shapes, plates, rails, pipe, wire and hot- and cold-rolled sheets and strip. To eliminate variations due to nonferrous

metals price fluctuations, no coated products are included.

Details of latest revisions which appear in current series may be found in The Iron Age, May 12, 1949, p. 189. This reference also gives a comparison of current series with former series.

STEEL INDUSTRY OPERATING RATES

U. S. Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings—Percent of Capacity

		a seed .					mace ingers	and	01001	101	20011119	, , ,		· oapaony							
	1941	1942	1943	1944	1945	1946		1947	1948	1949	1950	1951	1952		1953	1954	1955	1956	1957	1958	1959
Jan.	96.90	94.50	96.80	95.70	88.80	49.60	Jan.	93.20	93.60	100.4	94.0	99.9	99.3	Jan	99.1	75.3	82.7	99.3	97.1	56.5	74.3
Feb.	96.60	95.90		97.00	90.80	19.80	Feb.	91.90	93.00	101.6	89.2	97.2	100.7	Feb.		74.3	88.0	99.2	97.6	53.6	84.8
Mar.	99.70	98.20		98.60	95.00	83.30	Mar.	94.40	95.30	102.9	88.8	102.5	102.2	Mar	101.8	69.0		100.2	93.4	52.3	92.3
Apr.	97.60	97,70	99.30	98.80	92.80	77.50	Apr.	93.90	80.40	98.6	100.6	103.1	89.7	Apr		68.1	94.8		89.5	47.8	93.0
May	98.70	98.10	98.40	97.10	91.80	52.20	May	94.70	94.80	93.0	101.4	102.8	89.2	May	100.1	70.7	96.6	96.2	86.4	52.7	92.5
June	98.20	96.30	94.80	94.10	87.10	74.40	June.	92.90	93.80	82.2	99.6	101.0	18.4	June		72.0	94.1	92.1	85.6	61.6	89.9
July	93.40	94.50	96.20	94,30	86.30	84.90	July	85.10	88.70	71.0	94.8	98.3	17.7	July	93.1	62.9	85.3	14.9	78.6	53.9	41.7
Aug.	95.70	95.40	98.30	94.10	70.70	86.90	Aug.	92.20	93.10	82.3	96.5	98.7	92.4	Aug.		63.1	89.7	74.5	81.5	61.1	11.5
Sept.	96.40	96.40	100.70	94.00	76.30	86.90	Sept.	90.80	96.10	83.6	99.4	101.2	101.9	Sept.		66.7	95.7	98.8	81.8	66.0	12.7
Oct.	99.00	100.00	101.20	95.60	69.00	89.00	Oct.	97.70	99.90	11.4	102.4	103.0	106.6	Oct.		72.9	98.2	101.3	81.1	74.0	13.6
Nov.	98.30	97.80	98.60	94.30	78.90	85.40	Nov.	96.50	100.50	53.4	97.0	102.6	105.9	Nov	89.9	79.1	99.0	100.0	78.5	74.1	59.8
Dec.	98.10	96.60	94.20	92.60	74.80	73.90	Dec.	95.40	97.70	94.8	98.0	100.6	105.6	Dec	79.7	78.6	98.5	99.4	72.0	72.9	85.7 *
Aver	age 97.40	96.80	98 10	95.50	83.50	72.50	Average	93.03	94 10	81.1	08.9	100.9	85.8	Averses	94.9	71 0	93.0	89.8	84.5	80.6	62 6"

^{*} Estimate. Source: American Iron and Steel Institute.

Openhearth, bessemer and electric furnace steel capacity, production and operating rates . . . Canadian output, capacity.

COMPOSITE PRICE BY PERIODS

Period	Cents per Pound
Apr. 12, 1949 to May 2, 1949	3.708
May 3, 1949 to Dec. 21, 1949	3.705
Dec. 22, 1949 to Dec. 28, 1949	3.836
Dec. 29, 1949 to Dec. 4, 1950	
Dec. 5, 1950 to July 25, 1952	4.131
July 26, 1952 to May 8, 1953	4.376
May 9, 1953 to May 21, 1953	4,390
May 22, 1953 to June 16, 1953	4.417
June 17, 1953 to Nov. 14, 1953	4.634
Nov. 16, 1953 to Dec. 15, 1953	4.632
Dec. 16, 1953 to June 30, 1954.	4.634
July 1, 1954 to July 2, 1954	4.635
July 3, 1954 to July 5, 1954	4.791
July 6, 1954 to Oct. 3, 1954	4.801
Oct. 4, 1954 to Nov. 9, 1954	4.798
Nov. 10, 1954 to July 11, 1955	4.797
July 12, 1955 to July 18, 1955	5,178
July 19, 1955 to July 25, 1955	5.176
July 26, 1955 to March 19, 1958	5.174
Mar. 20, 1956 to Aug. 6, 1956	5.179
Aug. 7, 1956 to Aug. 13, 1956	5.374
Aug. 14, 1956 to Feb. 11, 1957	5.622
Feb. 12, 1957 to Feb. 18, 1957	5.650
Feb. 19, 1957 to Feb. 25, 1957	5.661
Feb. 26, 1957 to March 4, 1957	5.663
March 5, 1957 to July 8, 1957	5,670
July 9, 1957 to Aug. 4, 1958	5,967
Aug. 5, 1958 to Aug. 11, 1958	6.138
Aug. 12, 1958 to Sept. 8, 1958	6,188
Sept. 9, 1958 to Dec. 31, 1959	6.196

CANADIAN STEEL OUTPUT

Ingots and Steel for Castings, Net Tons

	Ingets	Castings	Steel Ingets and Castings
1932	349.843	25,664	375.507
1933	441,346	17,830	459,176
1934	827,041	23,116	850,157
1935	1.016,814	35,123	1.051.937
1935	1,211,334	38,337	
1937	1,496,575		1,249,671
1937	1.238.078	74.652	1,571,137
1938	1.266.056	56,636	1,294,714
	2,177,973	60,997	1.327,053
1940		77,899	2,255,872
1941	2,578,063	123,250	2,701,313
1942	2,942,921	178,440	3,121,361
1943	2,848,235	148,743	2,996,978
1944	2,878,407	146,003	3,024,410
1945	2,747,206	134,117	2.881,323
1946	2.253,437	81,194	2,334,631
1947	2,854,532	90,634	2,945,168
1948	3,089,027	112,629	3,201,656
1949	3,089,368	97,562	3,186,930
1950	3,298,068	86,063	3,381,131
1951	3,446,125	121,236	3,567,361
1952	3,578,106	122,037	3,700,143
1953	4,009,813	105,656	4.115,469
1954	3,113,882	80,300	3.194,122
1955	4,441,743	87,658	4,529,401
1956	5.188,227	120.578	5.305.805
1957	4,924,133	113,731	5.037.864
1958	4,254,607	90.684	4,345,291
1959°.	5,709,000	106,000	5,815,000

^{*} Estimated. Source: Dominion Bureau of Statistics.

CANADIAN STEEL CAPACITY

Ingot Capacity and Operating Rates

	Steel Ingot Capacity	Steel Ingot Output	Percent of Capacity
1941	2.964,000	2.578.063	86.9
1942	3,172,000	2.942.921	92.7
1943	3.257,500	2.848.235	87.4
1944	3.338,200	2.878,407	86.2
1945	3,358,600	2.767.206	81.7
1946.	3,358,600	2.253.437	67.0
1947	3.245.000	2.854.532	87.9
1948	3,490,000	3,089,027	88.5
1949	3,598,000	3,089,368	84.1
1950	3,872,500	3,298,068	89.8
1951	3,630,900	3,446,125	94.9
1952	3,630,900	3,578,106	98.5
1953	4,302,800	4,009,813	93.1
1954	4,657,500	3,113,822	66.8
1955	4.883,000	4,441,743	90.9
1956	5,504,000	5,185,227	94.2
1957	5,504,000	4,924,133	89.4
1958	6,313,000	4,254,607	67.3
1959*	6,313,000	5,709,000	90.4

^{*} Estimated. Source: Dominion Bureau of Statistics.

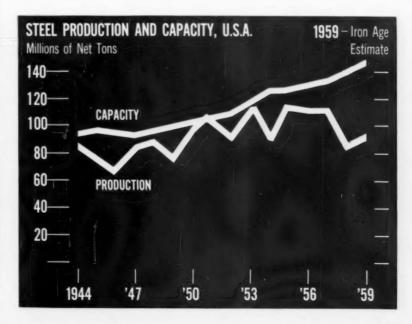
STEEL CAPACITY, PRODUCTION AND RATES

Ingots and Steel for Castings, Net Tons

		Openhe	arth	Bessen	107	Electri	c*	Total	
	Total Capacity	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Capacity
1958	147,633,670 140,742,570 133,459,150 128,363,090 125,828,310	92,000,000† 75,879,394 101,657,776 102,840,585 105,359,417	89.1 89.1 90.2 89.2 90.0	1,400,000† 1,395,985 2,475,138 3,227,997 3,319,517	1.6 1.6 2.2 2.8 2.8	8,600,000 7,979,506 8,582,082 9,147,567 8,357,151	9.3 9.3 7.6 8.0 7.2	82,000,000† 85,254,885 112,714,996 115,216,149 117,036,085	62.6 60.6 84.5 89.5 93.0
1953	108,587,670	80,327,494 100,473,823 82,846,439 93,166,518 86,262,509	91.0 90.0 88.9 88.6 89.1	2,548,104 3,855,705 3,523,677 4,890,946 4,534,558	2.9 3.5 3.8 4.6 4.7	5,436,054 7,280,191 6,797,923 7,142,384 6,039,008	6.1 6.5 7.3 6.8 6.2	88,311,652 111,609,719 93,168,039 105,199,848 96,836,075	71.0 94.9 85.1 100.9
1949 1948 1947 1946	94,233,460 91,241,250 91,890,560	70,248,803 79,340,157 76,873,793 60,711,963 71,939,602	90.1 89.5 90.5 91.2 90.3	3,946,656 4,243,172 4,232,543 3,327,737 4,305,318	5.1 4.8 5.0 5.0 5.4	3,782,717 5,057,141 3,787,785 2,563,024 3,456,728	4.8 5.7 4.5 3.8 4.3	77,978,176 88,640,470 84,894,071 66,602,724 79,701,648	81. 94. 93. 72. 83.
1944 1943 1942 1941		76,501,957 74,389,619	89.7 88.5 88.9 89.8 91.9	5,039,923 5,625,492 5,553,424 5,578,071 3,708,573	5.6 6.3 6.5 6.7 5.6	4,237,724 4,589,216 3,976,550 2,871,569 1,701,030	4.7 5.2 4.6 3.5 2.5	89,641,600 88,836,512 86,031,931 82,839,259 68,982,686	95. 98. 96. 97. 82.
1939 1938 1937 1936 1935	80,158,638 78,148,374 78,164,300	29,080,016 51,824,979 48,780,463	91.7 91.6 91.5 91.2 90.1	3,358,916 2,106,340 3,863,918 3,873,472 3,175,235	6.4 6.6 6.8 7.2 8.3	1,029,998 565,634 948,048 866,064 607,190		52,798,714 31,751,990 56,636,945 53,499,999 38,183,705	64. 39. 72. 68. 48.
1934 1933 1932 1931	78,614,403 78,780,913 77,257,803	22,827,473 13,338,210 25,210,714	87.7 87.0 86.8	2,421,840 2,720,246 1,715,925 3,386,259 5,639,714	10.5 11.2 11.6	405,246 472,510 270,786 461,988 688,634	1.8 1.8 1.6	29,181,924 26,020,229 15,322,901 28,058,961 45,583,421	33. 19. 37

¹ Includes very small tennages of crucible steel.

† IRON AGE Estimate. Source: American Iron & Steel Institute



Monthly data on U.S. production of openhearth, bessemer and electric furnace ingots . . . Round-up of world steel output.

WORLD STEEL PRODUCTION

Ingots and Steel for Castings, Thousands of Net Tons

Compiled by THE IRON AGE from the United Nations Bulletin of Statistics, Chambre Syndicate de la Siderurgie Française, British Iron and Steel Federation and the American Iron and Steel Institute.

	1959°	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
Australia	3,700	3,532	3.373	2,914	2,480	2,117	2,296	1.835	1,606	1.596	1,309	1,425
Austria	2,800	2,638	2,766	2.290	2,009	1,822	1,427	1,165	1,133	1.044	920	713
Belgium	7,000	6,628	6,922	7,028	6,403	5,522	4,997	5,621	5,590	4,155	4,242	4,318
Brazil	1,800	1,764	1,590	1,504	1,286	1,288	1,109	985	930	834	677	545
Canada	5,800	4.350	5,040	5,306	4,529	3,192	4,110	3,763	3,567	3,384	3,188	3,159
China	13,200	8,818	5,499	5,024	3,142	2,397	1,150					
Czechoslovakia	6,600	6.074	5,622	5,382	5,401	4,884	4,883	3,944	3,651	3,190	2,756	2,910
France	16,500	16,111	15,546	14,770	13,880	11,319	11,023	11,979	10,842	9,537	10,086	7,984
Ger- (West.,	28,300	25,117	27,014	25,561	23,518	19,221	16,997	17,423	14.888	13,3612	10.0902	6,1272
many East.	3,500	3,825	3,203	3,020	2,758	2,486	2,666	2.087	1,711			
Hungary	1,900	1,793	1,411	1,571	1,764	1,644	1,653	1,539	1,360	1,100	882	794
India	2,400	2,031	1,915	1,947	1,909	1,882	1,691	1,768	1,680	1,610	1,517	1,237
Italy	7,100	6,913	7,482	6,512	5,947	4,638	3,858	3.897	3,382	2,583	2,285	2,342
Japan	17,000	13,358	13,854	12,243	10,370	8,523	8,445	7,703	7,167	5,332	3,352	1,916
Luxembourg.	3,900	3,724	3,853	3,809	3,555	3,118	2,931	3,309	3,391	2,702	2,507	2,705
Mexico	1,200	1,090	683	648	570	515	504	561	500	390	380	268
Netherlands	1,800	1,585	1,299	1,159	1,074	1,023	948	755	609			
Peland	6,200	6,207	5,846	5,527	4,894	4,370	3,965	3,509	3,078	2,750	2,539	2,116
Rumania	1,400	1,030	941	862	843	693	793	769	720		1514	
Saar,	4,000	3,814	3,797	3,719	3,849	3,093	2,959	3,112	2,869	2,092	1,936	1,922
South Africa.,	2,000	1,952	1,848	1,708	1,681	1,523	1,366	1,326	1,045	830	699	750
Spain	2,200	1,720	1,456	1,370	1,337	1,209	985	1,000	902	900	793	604
Sweden	3,100	2,649	2,733	2,646	2,342	2,052	1,969	1,836	1,658	1,587	1,511	1,270
Un. Kingdom,	22,400	21,914	24,304	23,138	22,166	20,742	19,723	18,388	17,516	18,240	17,256	16,662
U. S. S. R	65,000	60,482	56,325	54,443	49,938	45,203	41,800	36,029	34,500	29,800	23,600	18,700
United States	92,000	85,255	112,717	115,216	117,036	88,312	111,610	93,168	105,200	96,836	77,978	88,894
Yugoslavia	1,400	1,234	1,154	977	889	679	568	488	470			
Others	3,800	3,385	2,868	2,380	1,816	1,546	2,280	1,524				

Totals..... 328,000 299,000 321,061 312,654 297,011 245,013 258,706 229,423 229,945 204,348 173,386 167,107

* Estimated. † Revised. 2 British, French and United States Zones.

WORLD STEEL DATA

Data in the table at left are based on an extensive Iron Age study. Assisting in the study were the Intelligence Dept. of the British Iron & Steel Federation Chambre Syndicate de la Siderugie Francaise, United Nations, American Iron and Steel Institute and Iron Age correspondents throughout the world. Though based on the best available information, the accuracy of Iron Curtain steel data is naturally not of the same order as that of the free world.

U. S. MONTHLY STEEL INGOT PRODUCTION

Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings, Net Tons; U. S. Only

	1934	1930	1936	1937	1938	1030	1940	1941	1942	1943	1994	1840	1940
Jan	2,276,596	3,279,473	3,474,353	5,398,326	1,984,815	3,663,004	5,764,723	6,928,083	7,112,106	7,424,522	7,592,603	7,204,312	3,872,887
Feb	2,521,472	3,169,909	3,379,587	5,050,824	1,942,795	3,448,120	4,525,797	6,237,900	6,512,535	6,824,604	7,194,009	6,652,765	1,392,682
Mar.	3,190,040 3,346,922	3,273,910 3,017,177	3,810,436 4,494,782	5,970,247 5,801,540	2,293,884 2,196,413	3,929,387 3,431,600	4,389,183	7,131,641 6,756,949	7,392,111 7,121,291	7,674,578 7,373,703	7,826,257 7,593,688	7,705,929 2,289,887	6,508,784 5,801,195
Apr	3,875,202	3,009,425	4,614,529	5,894,260	2,661,169	3,372,636	4,967,782	7,053,238	7.382,578	7,549,691	7,702,576	7,449,667	4,072,620
June	3,487,612	2,580,771	4,543,888	4,787,710	1,868,848	3,806,729	5,657,443	6,800,730	7,015,302	7,039,353	7,234,257	6,840,522	5,625,773
FF.	* 007 070	0.504.040	4 472 040	F 050 000	0.000.000	2 242 222		0.004.000	7444.000	7 407 070	7 640 207	0.005.574	0.010.002
July	1,697,879	2,591,240 3,331,770	4,473,940	5,212,832 5,580,683	2,259,677 2,903,805	3,648,639 4,341,726	5,724,625 6,186,383	6,821,682 7,000,957	7,144,958 7,227,655	7,407,876 7,586,464	7,948,387 7,498,913	6,985,571 5,735,317	6,618,683 6,924,522
Sept.		3,227,876	4,744,841	4,907,592	3,029,736	4,881,601	6,056,248	6,819,246	7,057,519	7,514,339	7,235,111	5,982,475	6,555,566
Oct.		3,590,945	5,182,430	3,881,819	3,554,912	6,223,126	6.644,542	7,242,683	7,579,514	7,614,117	7,620,885	5,596,776	6,951,742
Nov	1,836,068	3,599,687	4,941,014	2,464,793	4.072,676	6,292,322	6,469,107	6,969,987	7,179,812	7,371,975	7,278,719	6,200,466	6,457,771
Dec	2,239,126	3,511,702	6,056,843	1,685,273	3,751,253	5,958,893	6,495,357	7,163,999	7,304,540	7,255,144	7,336,170	8,067,937	5,760,501
Total	29,181,329	38,183,705	53,449,085	56,635,899	31,751,983	52,797,783	66,981,662	82,927,557	86,029,921	88,836,366	89,841,575	79,701,624	68,602,706
	1947	1948	1949	1980	1951	1962	1963	1954	1965	1956	1957	1958	1959
Jan.	7,222,612	7,480,878	8,197,390	7,941,797	8,848,466	9,136,117	9,897,962	7,951,486	8,837,736	10,828,231	11,008,762	6,753,912	9,317,385
Feb	6,430,401	6,948,017	7,493,942	8,803,032	7,770,407	8,657,210	8,932,779	7,083,237	8,496,934	10,118,995	9,987,206	5,782,323	9,602,938
Mar	7,318,974	7,616,770	8,401,796	7,497,822	7,076,630	9,404,191	10,168,098	7,289,600	9,981,754	10,924,788	10,589,074	6,254,622	11,567,745
Apr	7,051,842 7,339,014	6,224,487 7,580,642	7,796,165	8,224,504	8,845,979	7,991,142	9,545,538	6,970,937	9,815,095	10,536,121 10,490,376	9,814,780 9,792,323	5,532,991 6,301,159	11,281,920 11,600,581
June	6,977,714	7,265,249	7,598,990 6,504,656	8,564,207 8,143,230	9,100,155 8,662,348	8,204,596 1,639,491	9,997,080 9,404,479	7,472,738 7,383,634	10,328,316 9,746,467	9,721,438	9,391,402	7,127,480	10,907,634
20110	O'OLITICA.	1,200,270	0,004,000	0,140,200	0,002,010	1,000,401	0,104,110	1,000,000	0,1 10,101	0,121,100	0,001,102	.,,,,,	1010011001
July	8,578,685	7,075,517	5,784,831	8,082,922	8,684,495	1,626,968	9,275,673	6,627,597	9,100,946	1,622,163	8,908,732	6,420,405	5,227,129
Aug	6,991,152	7,446,834	6,722,771	8,242,174	8,739,095	8,498,687	9,405,580	6,666,907	9,594,545	8,122,597	9,233,890	7,286,003	1,439,277
Sept	6,797,457	7,424,844	6,597,935	8,204,997	8,660,357	9,062,105	8,883,428	6,807,483	9,882,325	10,422,659	8,977,906	7,610,372	1,535,017
Oct	7,570,152	7,996,895	928,347	8,752,688	9,121,886	9,806,830	9,462,722	7,701,563	10,501,050	11,048,513	9,197,717	8,839,778	1,704,533 7,262,000†
Nov Dec	7,242,427 7,375,641	7,797,558 7,780,779	4,223,129 7,728,224	8,023,393 8,355,311	8,799,352 8,890,678	9,438,886 9,690,162	8,690,052 7,946,328	8,089,427 8,287,073	10,247,398 10,503,519	10,555,500 10,837,545	8,392,919 7,420,285	8,569,318 8,710,522	10.554,000°
Meters	1,010,041	1,100,110	1,120,224	0,000,011	0,000,070	0,000,102	1,040,320	0,201,013	10,000,010	10,001,010	,,720,200	O). 10,044	10,000
Total	84.894.071	88 640 470	77 978 176	98 836 075	105 100 848	93 153 376	111,609,719	ER 311 652	117.038.085	115.216.149	112,714,998	85,254,885	92,000,000°

* Estimate. † Preliminary.

Source: American Iron and Steel Institute.

Financial analysis of steel industry . . . Twenty-nine steel producers covered represent 93.2 pct of U.S. ingot capacity.

FINANCIAL ANALYSIS OF THE STEEL INDUSTRY

For years 1954 through 1958. Data Cover 29 Companies Representing 93.2 Pct of U. S. Ingot Capacity

COMPANY Year	Inget Capacity Net Tens	Inget Production Net Tens	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net income Percent of Sales	Earnings Per Common Share	Invested Capital
U. S. Steel Corp. 1988 1957 1956 1955 1954	40,212,000 39,582,000 39,582,000 38,877,000 38,715,000	23,818,889 33,738,000 33,402,000 35,309,000 28,355,000	59.23 85.2 85.2 90.8 73.2	16,992,305 23,414,000 23,911,000 25,506,000 20,239,000	\$3,472,177,001 4,413,806,173 4,228,877,241 4,097,880,287 3,250,389,279	\$285,000,000 406,000,000 331,000,000 366,000,000 190,000,000	\$301,558,231 419,406,956 348,098,916 370,099,353 195,417,611	8.7 9.5 8.2 9.0 6.0	\$5.13 7.33 6.01 6.44 6.46	\$3,601,550,892 3,214,366,449 3,008,996,483 2,868,655,585 2,672,832,918
Bethlehem Steel Corp. 1958 1957 1956 1955 1954	23,000,800 20,500,000 20,000,000 19,100,000 18,500,000	13,393,034 19,123,201 18,322,306 18,820,912 13,810,076	58.2 93.3 91.6 98.5 74.6	9,686,228 13,535,705 13,198,783 13,553,823 10,226,752	2,024,282,732 2,624,913,123 2,343,478,150 2,114,599,636 1,667,377,179	131,000,000 175,000,000 147,000,000 181,000,000 119,000,000	137,741,946 191,025,933 161,411,625 180,191,708 132,837,154	6.8 7.3 6.9 8.5 8.0	2.91 4.13 15.33 18.09 13.18	1,786,506,120 1,758,004,876 1,606,356,409 1,522,975,045 1,232,094,615
Republic Steel Corp. 1958 1957 1956 1955 1954	12,242,000 11,047,000 10,202,000 10,262,000 10,262,000	6,430,283 8,484,615 9,348,898 9,680,121 6,972,812	52.5 76.8 91.1 97.1 69.8	4,463,595 6,211,485 6,783,307 6,988,782 5,012,330	910,382,817 1,227,257,507 1,244,214,346 1,188,559,765 846,310,670	60,500,000 89,800,000 94,700,000 84,000,000 49,900,000	61,921,580 85,014,422 90,406,565 86,271,491 52,875,164	6.8 6.9 7.3 7.3 6.2	3.96 5.45 5.83 5.59 7.10	811,474,121 773,190,575 698,248,994 650,126,815 629,318,251
Jones & Laughlin Steel Corp1958 1957 1958 1955 1954	7,500,000 8,900,000 6,166,500 6,166,500 6,166,500	4,947,000 6,048,000 5,997,000 6,190,000 4,570,000	66.0 88.0 97.0 100.0 74.0	3,357,000 4,272,000 4,341,000 4,418,000 3,203,000	854,060,000 837,568,000 742,642,000 696,538,000 492,941,008	18,090,000 39,901,000 39,380,000 46,500,000 22,543,000	23,198,000 45,452,000 45,122,000 50,104,000 25,032,000	3.6 5.4 6.1 7.2 5.1	2.79 5.65 6.63 7.73 3.80	658,388,000 647,694,000 581,426,000 526,212,000 497,439,000
National Steel Corp. 1958 1957 1956 1955 1954	6,200,000	4,476,000 5,326,425	66.0 88.0		539,957,294 640,967,342 664,251,090 622,018,919 484,058,360	35,000,000 43,550,000 47,000,000 48,275,000 27,750,000	35,827,414 45,518,884 52,502,422 48,289,453 30,334,871	6.64 7.1 7.9 7.8 6.3	4.80 6.13 7.09 6.54 4.12	566,889,280 551,004,815 532,312,345 452,911,987 427,082,106
Youngstown Sheet & Tube Co. 1955 1957 1956 1956 1954	6,240,0F 5,750,0GU 5,520,000	3,659,482 5,137,834 5,406,016 5,571,556 3,888,525	56.3 82.3 94.0 100.9 70.1	2,542,714 3,593,375 3,839,224 3,944,492 2,606,540	506,959,574 679,885,073 684,041,021 626,232,840 433,406,272	20,170,000 39,488,000 37,329,000 41,867,500 12,104,000	21,501,320 42,508,579 43,174,587 41,701,140 20,182,500	4.3 6.25 6.31 6.8 4.7	6.23 12.35 12.62 12.34 6.02	553,400,772 531,846,126 498,364,512 462,890,771 432,764,332
Armco Steel Corp	5,950,000 5,150,000 4,950,000	4,508,127 5,406,646 5,220,147 5,099,905 4,448,772	70.5 90.9 101.4 103.0 90.8	3,640,620 3,807,723 3,936,105 4,003,532 3,171,401	867,390,909 776,736,401 761,800,102 892,683,234 532,045,314	55,860,180 54,521,286 63,290,322 66,613,787 42,522,317	65,593,182 64,350,609	6.63 7.09 8.61 9.3 7.7	3.89 4.59 6.03 6.05 7.86	744,472,289 603,150,601 480,309,799 444,015,755 403,749,452
Inland Steel Co	5,500,000 5,200,000 5,000,000	4,714,904 5,502,000 4,915,576 5,189,509 4,522,257	81.3 100.0 94.5 103.8 96.2	3,384,209 4,041,130 3,852,719 3,954,567 3,392,659	661,253,598 772,380,683 731,767,767 663,317,374 537,024,479	42,440,000 60,555,000 55,142,000 53,050,000 37,930,000	58,876,875 52,998,726 52,466,098	7.3 7.7 7.3 8.0 7.7	8.32 10.34 9.43 9.52 7.92	604,801,130 582,774,294 497,757,696 416,415,101 287,259,955
Colorado Fuel & Iron Corp 195 195 195 195 195 195	2,799,500 2,471,500 2,471,500	1,706,308 2,163,594 2,401,231 1,936,402 1,845,693	60.16 77.3 97.16 78.35 74.8	1,355,084 1,815,406 2,134,490 1,627,587 1,687,950	341,630,224 257,543,050	2,468,500 14,926,006 16,891,800 10,681,800 6,125,000	16,662,653 10,887,163	0.78 4.18 4.9 4.2 2.8	0.47 4.04 4.74 3.79 2.46	195,728,675 197,115,766 189,184,650 170,325,365 167,132,675
Wheeling Steel Carp. 195 195 195 195 195	7 2,200,000 6 2,130,000 5 2,130,000	1,828,534 1,994,745 2,057,288	83.1 93.7 96.6	1,119,363	249,756,955 259,554,918 249,455,016	6,954,000 10,116,000 18,630,000 18,480,000 8,483,000	12,077,696 17,872,276 17,295,711	4.03 4.54 6.81 6.9 5.0	3.69 5.32 8.20 8.12 5.48	237,440,675 237,041,083 236,452,196 229,796,667 205,866,412
Sharon Steel Corp. 195 195 195 195 195	7 1,898,000 6 1,763,000 5 1,550,000	1,204,283 1,506,660 1,528,686	63.5 85.6 98.6	517,277 856,503 1,126,612 1,092,593 611,686	151,651,824 180,044,408 173,095,949	199,000 3,606,000 6,473,000 7,840,000 1,865,000	4.046,773 6,905,539 7,987,622	0.22 2.7 3.8 4.6 3.2	0.20 3.68 6.28 7.26 2.85	96,284,44; 92,082,96; 82,716,19; 73,098,95; 68,711,325
McLouth Steel Corp	7 1,574,000 6 1,380,000 5 1,200,000	1,534,240	97.5 99.5	1,047,025 1,122,335 1,092,877	179,458,165 163,906,619 144,987,476	2,430,000 5,562,000 9,110,000 7,375,000 2,090,000	9,409,977 8,806,258 8,148,342	5.83 5.2 5.4 5.6	5.65 5.37 5.01 5.66 1.42	162,564,48 153,969,76 123,232,92 127,716,52 132,513,53
Kaiser Steel Corp	7 1,536,000 6 1,536,000 5 1,536,000	1,590,322 1,617,681 1,432,742	103.5 105.3 93.3	940,500 1,043,620 1,140,770 929,550 933,843	208,619,403 201,489,824 136,148,919	2,175,000 9,300,000 12,055,000 3,325,000	21,438,507 23,571,852 5,471,238	4.2	0.76 5.91 6.57 1.08 1.75	407,970,26 373,126,51 245,177,55 245,329,44 245,984,84
Detroit Steel Corp	7 1,500,000 4 1,290,000 5 1,290,000	562,47 1,032,23 888,44	7 37.0 7 80.0 3 68.9	386,09: 480,91: 909,26 787,78: 371,08	82,458,616 1 123,616,057 8 101,803,010	9,015,00 6,715,96	3,064,382 0 8,747,092 6 6,317,860	3.6	0.31 0.90 2.78 2.07 0.49	81,723,21 84,841,54 87,696,38 85,693,20 40,265,48
Crucible Steel Co. of America 19: 19: 19: 19: 19: 19: 19: 19: 19: 19:	1,423,400 6 1,423,400 5 1,351,400	1,222,17	8 99.4	459,31	235,938,306 263,922,898 237,715,380	5,630,00 12,910,00 15,570,00	0 6,543,594 0 12,767,625 0 13,298,602	2.8 4.8 5.6	1.13 1.73 7.02 8.05 2.83	142,135,17 141,257,39 140,460,52 128,847,92 119,995,02

FINANCIAL ANALYSIS (Continued)

COMPANY Year	Inget Capacity Net Tens	Inget Production Net Tens	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Incomp	Net Income Percent of Sales	Earnings Per Common Share	Invested Capital
Pittsburgh Steel Co	1,416,000	955,593	61.3	725,653	\$134,475,314	\$-1,418,000	\$-865,593	-0.65	\$-1.37	\$120,019,201
	1,320,000	1,223,534	91.0	1,018,756	183,260,331	1,516,000	4,155,000	2.28	1.80	124,195,837
	1,320,000	1,139,882	86.4	1,077,610	179,133,961	3,404,000	6,225,000	3.49	3.24	125,912,965
	1,320,000	1,303,503	98.8	1,132,437	177,707,556	4,372,000	7,515,470	4.3	4.31	118,397,226
	1,320,000	1,070,386	76.2	784,429	124,489,418	973,000	2,170,694	1.8	0.62	116,385,912
Granite City Steel Company1958	1,200,000	1,106,556	87.8	879,500	125,272,603	10,127,000	9,373,580	7.5	4.36	123,871,072
1957	1,200,000	1,116,698	93.1	894,052	123,763,490	10,829,000	9,984,451	8.1	4.64	118,827,377
1958	1,080,000	1,151,620	107.0	1,067,932	137,131,233	15,800,000	15,109,411	11.0	7.04	113,844,912
1955	1,080,000	1,091,389	101.0	961,101	116,293,657	13,703,700	12,610,820	11.0	8.05	102,436,342
1954	1,080,000	634,909	58.8	559,112	60,265,197	4,400,700	4,012,192	5.8	2.04	90,232,973
Allegheny Ludlum Steel Corp 1958	864,200	418,254	48.4	270,213	202,572,808	6,174,000	5,844,803	2.89	1.52	141,392,570
1957	864,200	495,280	57.3	352,989	267,647,586	13,441,000	11,651,851	4.35	3.02	144,990,974
1956	864,200	666,918	77.2	453,822	287,078,052	16,867,000	15,261,090	5.32	4.04	140,683,981
1955	864,200	683,195	79.1	464,231	255,587,054	16,554,000	14,985,660	5.9	8.25	121,125,921
1954	864,200	431,068	49.9	305,208	170,066,406	4,459,000	4,246,083	2.5	2.30	80,073,450
Barium Steel Corp. 1958	846,760	226,110	26.70		27,614,634	-2,185,396	-1,966,545	-7.12	-1.90	32,168,100
1957	846,760	585,993	69.0		83,885,112	3,536,000	3,062,998	3.65	0.74	35,575,755
1956	893,000	732,600	82.0		119,536,637	8,118,951	7,009,956	5.86	1.98	37,808,634
1955	893,000	520,900	58.3		75,084,700	995,255	655,319	0.9	0.20	22,822,552
1954	893,000	237,000	26.5		53,484,604	1,772,500	441,212	0.8	0.14	22,222,682
Northwestern Steel & Wire Corp. 1958	825,000	473,561	57.4	380,518	50,468,595	5,840,000	5,049,890	8.4	2.02	39, 205, 142
1957	825,000	703,752	85.3	548,419	78,105,122	6,030,000	5,225,418	6.7	2.09	36, 025, 803
1958	825,000	692,326	83.9	585,816	74,157,804	5,760,000	5,076,959	6.8	2.07	32, 971, 850
1955	825,000	502,443	60.9	391,675	51,403,405	4,610,000	4,131,969	8.0	5.05	29, 585, 467
1954	825,000	308,780	37.4	246,170	35,628,171	1,065,000	1,018,754	2.9	1.25	17, 127, 634
Alan Wood Steel Co. 1958 1957 1956 1955 1954	800,000 800,000 625,000 625,000	505,341 655,536 713,859 665,908 345,918	63.17 81.9 109.1 106.5 55.3	335,571 437,819 495,098 462,046 241,288	54,163,265 67,889,893 69,330,353 58,375,609 36,085,476	997,000 1,047,000 2,024,000 1,619,000 216,000	2,109,203 2,054,046 3,095,727 2,551,530 1,246,251	3.89 3.0 4.5 4.4 3.4	2.68 2.60 4.04 3.32 1.42	38,227,292 38,330,232 36,653,635 35,951,285 36,647,492
Lukens Steel Co	750,000	602,996	80.4	404,770	99,256,110	4,255,000	4,181,986	4.2	4.38	63,776,747
	750,000	758,212	101.1	566,521	130,473,207	11,687,000	10,119,998	7.8	10.61	43,052,616
	750,000	703,434	93.8	512,735	105,173,925	7,675,000	7,504,889	7.1	23.60	39,593,68
	750,000	691,444	92.2	490,569	79,307,572	2,400,000	1,731,238	2.2	5.44	34,334,613
	675,000	631,834	93.6	455,153	74,954,710	2,065,000	2,014,791	2.7	6.33	33,569,83
Copperweld Steel Co	660,000 660,000 660,000 618,380 618,380				93,526,153 121,094,351 100,541,926 78,490,150 49,694,295	2,175,000 2,500,000 4,220,000 2,990,000 520,000	2,081,114 2,769,855 3,440,872 2,365,459 927,065	2.2 2.3 3.4 3.0 1.9	1.76 2.41 4.08 2.81 1.32	56,065,725 55,480,325 40,267,98 35,574,89 29,284,89
Lone Star Steel Co	660,000	384,475	58.3	192,000	45,804,182	None	1,064,697	2.0	0.33	99,899,71
	550,000	666,853	121.2	469,228	95,340,258	11,570,000	11,329,508	11.9	3.90	103,203,07
	550,000	629,579	114.4	485,269	88,650,577	11,000,000	10,151,363	11.5	3.84	100,373,57
	550,000	556,304	101.0	442,762	74,489,168	4,665,000	4,759,086	6.4	1.80	102,838,28
Acme Steel Co	608,000 608,000	329,716 383,550	63.0	557,250 717,395	128,817,000 147,749,000	5,113,000 6,186,000	5,307,000 6,016,000	4.12 4.07	1.89 2.40	97,205,00 89,457,00
Laclede Steel Co	600,000	454,693	75.7	350,324	63,159,247	4,075,000	3,704,251	5.86	17.96	32,137,75
	500,000	452,005	86.9	352,526	62,226,543	4,675,000	3,838,646	6.17	18.61	30,283,50
	500,000	505,575	101.1	398,181	66,509,030	4,575,000	4,086,071	6.14	19.81	26,832,56
	500,000	473,708	94.7	386,408	58,191,338	4,700,000	4,047,053	7.0	19.62	24,658,70
	500,000	396,023	79.2	311,140	45,364,073	3,050,000	2,943,150	6.5	14.27	22,106,58
Keystone Steel & Wire Co 1958 1957 1956 1955 1954	450,000 450,000 450,000 425,000 425,000	366,793 395,236 438,364 416,090 334,444	97.41 97.90	291,734 290,354 353,019 344,414 275,229	61,198,258 59,739,437 66,629,700 62,020,363 49,332,276	6,992,003 6,393,924 7,993,443 8,830,268 6,981,536	6,736,519 6,498,163 8,013,050 8,768,519 6,114,772	11.01 10.88 12.03 14.1 12.4	3.59 3.47 4.27 4.68 3.26	41,294,52 38,306,00 35,559,84 31,296,79 26,278,27
Continental Steel Corp	420,000 420,000 394,000 394,000 394,000	308,248 338,508 368,059 384,380 336,149	80.6 93.4 97.6	253,835 231,880 272,996 285,972 232,108	46,798,182 42,657,749 46,703,332 44,881,747 35,661,858	4,405,000 3,130,900 2,810,000 2,760,000 1,600,000	3,887,634 2,756,655 2,793,574 3,022,143 1,993,337	8.31 6.46 5.98 6.7 5.6	7.53 5.34 5.57 6.02 3.97	27,570,05 25,689,82 24,135,91 22,921,08 21,603,02
Atlantic Steel Co	400,000 400,000	146,643 229,807		129,046 175,453	22,083,434 28,115,864	241,000 327,000	353,235 348,182	1.60 1.24	0.77 0.76	12,892,19 12,584,96
1957 1956 1955	125.043.860	105,500,000 107,000,000 109,000,000	84.5 89.8 93.0	56,800,000 74,300,000 77,300,000	\$11,999,934,892 14,904,100,684 14,329,463,893 13,225,990,770 9,977,835,497	\$712,590,287 992,530,516 1,050,902,715 1,027,297,914 553,857,391	1,093,416,709 1,044,506,967 1,034,621,961	6.5 7.3 7.2 7.8 6.0	\$3.62 5.85 6.96 7.16 5.99	\$11,571,025,63 10,836,555,25 9,790,957,63 9,132,827,14 8,205,155,03

^{*} Estimated on operating rate.

Steel Prices: Hot and cold rolled sheet and strip, galvanized sheets, tinplate and high-speed tool steel.

COL	-ROL	LED S	TRIP				COLD	ROL	LED S	HEET	5			GALV	ANIZ	ED SI	HEETS	t		
At Pittsb	urah	Cents	Par Po	und			At Pittsbu	rah (Cents	Par P	hand			At Pittsbu	rah (Cents	Per Po	und		
Jan. Feb. Mur. Apr. May. June	1948 3.55 3.55 3.55 3.55 3.55 3.53	1949 4.00 4.00 4.00 4.00 4.00 4.00	1950 4.20 4.21 4.21 4.21 4.21 4.21	1951 4.75 4.75 4.75 4.75 4.75 4.75 4.75	1952 4.65 4.65 4.65 4.65 4.85 4.85	1953 5.10 5.16 5.16 5.10 5.10 5.25	Jan. Feb. Mar. Apr. May. June	1948 3.55 3.55 3.55 3.55 3.55 3.49 3.49	1949 4.00 4.00 4.00 4.00 4.00 4.00	1950 4.10 4.10 4.10 4.10 4.10 4.10	1951 4.35 4.35 4.35 4.35 4.35 4.35 4.35	1952 4.35 4.35 4.35 4.35 4.35 4.35 4.35	1953 4.575 4.575 4.575 4.575 4.575 4.575 4.580	Jan. Feb. Mar. Apr. May June	1948 3.95 3.95 3.95 3.95 3.95 3.91 3.91	1949 4.40 4.40 4.40 4.40 4.40 4.40	1950 4.40 4.40 4.40 4.40 4.40 4.40	1951 4.80 4.80 4.80 4.80 4.80 4.80	1952 4.80 4.80 4.80 4.80 4.80 4.80	1953 5.075 5.075 5.075 5.075 5.075 5.075 5.160
July Aug. Sept. Oct. Nov. Dec. Averag	4.00 4.00 4.00 4.00 4.00	4.00 4.00 4.00 4.00 4.00 4.00 4.08	4.21 4.21 4.21 4.21 4.21 4.75 4.25	4.75 4.75 4.75 4.75 4.75 4.75 4.75	4.74 5.10 5.10 5.10 5.10 5.10 4.85	5.45 5.45 5.45 5.45 5.45 5.45 5.29	July Aug Sept Oct Nov Dec Average	3.62 4.00 4.00 4.00 4.00 4.00 3.73	4.00 4.00 4.00 4.00 4.00 4.04 4.04	4.10 4.10 4.10 4.10 4.10 4.35 4.12	4.35 4.35 4.36 4.36 4.35 4.35 4.35	4.395 4.575 4.575 4.575 4.575 4.575 4.449	4.775 4.775 4.775 4.775 4.775 4.775 4.775 4.682	July Aug. Sept. Oct. Nev. Dec. Average	4.83 4.40 4.40 4.40 4.40 4.40 4.13	4.40 4.40 4.40 4.40 4.40 4.40	4.40 4.40 4.40 4.40 4.80 4.43	4.80 4.80 4.80 4.80 4.80 4.80	4.855 5.075 5.075 5.075 5.075 5.075 4.919	5.275 5.275 5.275 5.275 5.275 5.275 5.275 5.182
Jan. Feb. Mar. Apr. May June	1954 5.45 5.45 5.45 5.45 5.45	1955 5.75 5.75 5.75 5.75 5.75 5.75	1956 6.25 6.25 6.25 6.25 6.25 6.25	1957 6.85 6.85 6.85 6.85 6.85 6.85	7.170 7.170 7.170 7.170 7.170 7.170 7.170	1959 7.425 7.425 7.425 7.425 7.425 7.425	Jan. Feb. Mar. Apr. May. June	4.775	1955 4.95 4.95 4.95 4.95 4.95 4.95	1956 5.325 5.325 5.325 5.325 5.325 5.325	1957 5.75 5.75 5.75 5.75 5.75 5.75	1958 6.050 6.050 6.050 6.050 6.050	1959 6.275 6.275 6.275 6.275 6.275 6.275	Jan. Feb. Mar. Apr. May June	1954 5.275 5.275 5.275 5.275 5.275 5.275	1955 5.45 5.45 5.45 5.45 5.45 5.45	1956 5.85 5.85 5.85 5.85 5.85 5.85	1957 6.30 6.30 6.30 6.30 6.30 6.30	1958 6.600 6.600 6.600 6.600 6.600	1959 6.875 6.875 6.875 6.875 6.875 6.875
July Aug. Sept. Oct. Nov. Dec. Averag	5.73 5.75 5.75 5.75 5.75 5.75 5.76	6.12 6.25 6.25 6.25 6.25 6.25 5.98	6.25 6.61 6.85 6.85 6.85 6.85 6.48	7.17 7.17 7.17 7.17 7.17 7.17 7.17 7.01	7.170 7.425 7.425 7.425 7.425 7.425 7.276	7.425 7.425 7.425 7.425 7.425 7.425 7.425 7.425	July Aug Sept Oct Nov Dec	4.95 4.95 4.95 4.95 4.95	5.231 5.325 5.325 5.325 5.325 5.325 5.325	5.325 5.580 5.75 5.75 5.75 5.75 5.75 5.488	6.05 6.05 6.05 6.05 6.05 6.05 5.90	6.050 6.275 6.275 6.275 6.275 6.275 6.275 6.143	6.275 6.275 6.275 6.275 6.275 6.275 6.275	July Aug Sept Oct Nov Dec Avorage	5.45	5.75 5.85 5.85 5.85 5.85 5.85 5.85	5.85 6.120 6.120 6.30 6.30 6.30 6.30	6.60 6.60 6.60 6.60 6.60 6.60	6.600 6.875 6.875 6.875 6.875 6.875 6.715	6.875 6.875 6.875 6.875 6.875 6.875 6.875
Her							нот-	POLI	En e	7018				† Hot-dip						
ног	-KOL	LED S	HEETS	•			HOTA	ROLL	ED 3	IRIF				3166	. PLA	1123				
At Pitts	burgh,		Per P	ound 1961	1952	1953	At Pittsb	urgh, 1948	Cents 1949	Per P	ound 1951	1952	1953	At Pittsb	urgh,	Cents 1949	Per P	ound 1951	1952	1953
Jan., Feb., Mar., Apr., May., June.	2.80 2.80 2.80 2.80 2.77 2.77	3.28 3.28 3.28 3.26 3.26	3.35 3.35 3.35 3.35 3.35 3.35	3.60 3.60 3.60 3.60 3.60 3.60	3.60 3.60 3.60 3.60 3.60 3.60	3.775 3.775 3.775 3.775 3.775 3.775 3.838	Jan. Feb. Mar. Apr. May June	2.80 2.80 2.80	3.28 3.28 3.28	3.25 3.25 3.25 3.25 3.25 3.25 3.25	3.50 3.50 3.50 3.50 3.50 3.50	3.50 3.50 3.50 3.50 3.50 3.50	3.725 3.725 3.725 3.725 3.725 3.725 3.810	Jan. Feb. Mar. Apr. May. June	2.95 2.95 2.95 2.95 2.93	3.50 3.50 3.50 3.50 3.40 3.40	3.50 3.50 3.50 3.50 3.50 3.50 3.50	3.70 3.70 3.70 3.70 3.70 3.70	3.70 3.70 3.70 3.70 3.70 3.70	3.90 3.90 3.90 3.90 3.90 3.98
July Aug. Sept. Oct. Nov. Dec.	3.21 3.21 3.21	3.25 3.25 3.25 3.25 3.25 3.29	3.35 3.35 3.35 3.35 3.35 3.60 3.37	3.60 3.60 3.60 3.60 3.60 3.60 3.60	3.635 3.775 3.775 3.775 3.775 3.775 3.676	3.925 3.925 3.925 3.925 3.925 3.925 3.855	July Aug. Sent. Oct. Nov. Dec. Average	3.28 3.28 3.28 3.28 3.28	3.25 3.25 3.25 3.25 3.25 3.25 3.25	3.25 3.25 3.25 3.25 3.25 3.50 3.50	3.50 3.50 3.50 3.50 3.50 3.50 3.50	3.545 3.725 3.725 3.725 3.725 3.725 3.606	3.925 3.925 3.925 3.925 3.925 3.925 3.832	July	3.50 3.50 3.50 3.50 3.50	3.40 3.40 3.40 3.40 3.40 3.44	3.50 3.50 3.50 3.50 3.50 3.70 3.52	3.70 3.70 3.70 3.70 3.70 3.70 3.70	3.74 3.90 3.90 3.90 3.90 3.90 3.78	4.10 4.10 4.10 4.10 4.10 4.10 4.01
Jan. Feb. Mar. Apr. May. June	3.92	4.05 4.05 4.05 4.05 4.05 4.05	1956 4.325 4.325 4.325 4.325 4.325 4.325	1957 4.675 4.675 4.675 4.675 4.675 4.675	1958 4.925 4.925 4.925 4.925 4.925 4.925	1959 5.100 5.100 5.100 5.100 5.100 5.100	Jan. Feb. Mar. Apr. May June	3.925 3.925 3.925 3.925	4.05 4.05 4.05 4.05	1956 4.325 4.325 4.325 4.325 4.325	1957 4.675 4.675 4.675 4.675 4.675 4.675	1958 4.925 4.925 4.925 4.925 4.925 4.925	5.100 5.100 5.100 5.100	Jan. Feb. Mar. Apr. May June.	4.10 4.10 4.10 4.10	1955 4.225 4.225 4.225 4.225 4.225 4.225	1956 4.50 4.50 4.50 4.50 4.50 4.50	1957 4.85 4.85 4.85 4.85 4.85 4.85	1958 5.12 5.12 5.12 5.12 5.12 5.12	1959 5.30 5.30 5.30 5.30 5.30 5.30
July	4.05 4.05 4.05 4.05	4.325 4.325 4.325 4.325 4.325	4.325 4.535 4.675 4.675 4.675 4.675 4.675	4.925 4.925 4.925 4.925 4.925 4.925 4.800	4.925 5.100 5.100 5.100 5.100 5.100 4.995	5.100	July Aug Sept Oct Nov Dec Average	4.05 4.05 4.05 4.05 4.05	4.325 4.325 4.325 4.325 4.325	4.675 4.675 4.675	4.925 4.925 4.925 4.925 4.925 4.925 4.80	4.925 5.100 5.100 5.100 5.100 5.100 4.998	5.100 5.100 5.100 5.100 5.100	July . Aug. Sept. Oct. Nev. Dec.	4.217 4.225 4.225 4.225 4.225 4.225	4.431 4.50 4.50 4.50 4.50 4.50 4.356	4.50 4.71 4.85 4.85 4.85 4.85 4.63	5.10 5.10 5.10 5.10 5.10 5.10 4.98	5.12 5.30 5.30 5.30 5.30 5.30 5.195	5.30 5.30 5.30 5.30 5.30 5.30 5.30
HIG	SH SI	EED '	LOOF	STEE	L		TINP	LATE	AT P	ITTS	BURG	H Do	llars Pe	r Base Box,	1.50-1	b Coo	ating			
18-4-1,	Cents	Per P	bund					1938°	1947°	1948 1	949 19	50 195	1 1952		1953	1954	1955 19	56 19	57 195	8 1959
Jan. 15 Feb. 15 Mar. 15 Apr. 15 May 15	57.57 15: 57.57 14: 57.57 14: 57.57 14: 57.57 14:	954 19 2.50 154. 3.00 154. 3.00 154. 3.00 154. 3.00 154.	00 160.0 00 160.0 00 160.0 00 160.0 00 160.0	0 168.0 0 168.0 0 168.0 0 168.0 0 168.0	0 179.50 0 179.00 0 179.50 0 179.50 0 179.50	184.00 184.00 184.00 184.00 184.00	Jan. Feb. Mar. Apr. May June	\$5.35 5.35 5.35 5.35 5.35 5.35	\$5.75 5.75 5.75 5.75 5.75 5.75	6.80 6.80 6.80 6.80 6.70	7.75 \$7. 7.75 7. 7.75 7. 7.75 7. 7.75 7.		0 \$8.70 0 8.70 0 8.70 0 8.70 0 8.70 70 8.70	Jan. Feb. Mar. Apr. May June	\$8.95 8.95 8.95 8.95 8.95 8.95		9.05 \$9 9.05 9 9.05 9 9.05 9 9.05 9 9.05 9	.45 \$9. .45 9. .45 9. .45 9. .85 10.	95 \$10.3 95 10.3 95 10.3 95 10.3 30 10.3 30 10.3	0 \$10.65 0 10.65 0 10.65 0 10.65 0 10.65 0 10.65
July 16 Aug. 16 Sept. 16 Oct. 16 Nev. 16 Dec. 18	66.00 15 66.00 15 66.00 15 68.00 15 66.00 15 66.00 15	8.00 154. 1.00 157. 1.00 160. 1.00 160. 1.00 160. 1.00 160. 1.00 160. 1.13 156.	00 160.0 00 164.8 00 168.0 00 168.0 00 168.0	0 168.0 0 168.0 0 168.0 0 174.0 0 174.0 0 174.0	0 179.50 0 184.00 0 184.00 0 184.00 0 184.00 0 184.00	0 184.00 0 184.00 0 184.00 0 184.00 0 184.00 0 184.00	July Aug. Sept. Oct. Nev. Dec. Average	5.35 5.35 5.18 5.00 5.31	5.75	6.80 6.80 6.80 6.80	7.75 7. 7.75 7. 7.75 7. 7.75 7. 7.75 7.	50 8.7 50 8.7 50 8.7 50 8.7 50 8.7 50 8.7 50 8.8	70 8.95 70 8.95 70 8.95 70 8.95 70 8.95	July Aug. Sept. Oct. Nov. Dec. Average	8.95 8.95 8.95 8.95 8.95	8.95 8.95 8.95 9.05 9.05 9.05 8.98	9.05 9 9.05 9 9.45 9 9.45 9	1.85 10. 1.85 10. 1.85 10. 1.95 10. 1.95 10.	30 10.3 30 10.3 30 10.6 30 10.6	0 10.65 0 10.65 0 10.85

Steel Prices: Hot rolled and cold-finished bars, wire, structurals, rails, pipe and stainless steel sheets.

MERCHANT BARS

At	Pittsburgh,	Cents	Per	Pound

	4 .					
	1948	1949	1950	1951	1952	1953
Jan	2.90	3.45	3.45	3.70	3.70	3.95
Feb	2.90	3.45	3.45	3.70	3.70	3.95
Mar	2.90	3.43	3.45	3.70	3.70	3.95
Apr	2.90	3.35	3.45	3.70	3.70	3.95
May	2.87	3.35	3.45	3.70	3.70	3.95
June	2.01	3.35	3.45	3.70	3.70	4.04
July	3.00	3.35	3.45	3.70	3.75	4.15
Aug	3.45	3.35	3.45	3.70	3.95	4.15
Sept	3.45	3.35	3.45	3.70	3.95	4.15
Oct	3.45	3.36	3.45	3.70	3.95	4.15
Nov	3.45	3.39	3.45	3.70	3.95	4.15
Dec		3.38	3.70	3.70	3.95	4.15
Average	3.13	3.37	3.47	3.70	3.79	4.06
	1954	1955	1956	1957	1958	1959
Jan	4.15	4.30	4.65	5.075	5.425	5.675
Feb	4.15	4.30	4.65	5.075	5,425	5.675
Mar	4.15	4.30	4.65	5.075	5.425	5.675
Apr	4.15	4.30	4.65	5.075	5.425	5.678
May	4.15	4.30	4.65	5.075	5.425	5.675
June	4.15	4.30	4.65	5.075	5.425	5.675
July	4.29	4.56	4.65	5.425	5.425	5.675
Aug	4.30	4.65	4.905	5.425	5.675	5.675
Sept	4.30	4.65	5.075	5.425	5.675	5.675
Oct	4.30	4.65	5.075	5.425	5.675	5.675
Nov	4.30	4.65	5.075	5.425	5.675	5.675
Dec	4.30	4.65	5.075	5.425	5.675	5.675
Average	4.22	4.46	4.813	5.220	5.529	5.67

CAST IRON WATER PIPE

At	New	York,	Net T	on, 6-	in. and	d Larg	jer
		1948	1949	1950	1951	1952	1953
Mar Apr.		89.16 89.18 89.18	105.95 103.98	\$94.95 92.36 91.50 91.50		\$109.00 109.00 109.00 109.00 109.00	\$114.00 114.00 114.00 114.00 114.00
June	B	95.50		91.50	109.00	109.00	114.00
Sept Oct. Nov Dec	l	103.86 105.95 105.95 105.95 105.95	94.95 94.95 94.95	91.50 91.50 91.50 95.00 95.00 98.00 92.98	109.00 109.00 109.00 109.00 109.00		

	1954	1955	1956	1957†	19581	19591	
Jan	\$115.50	\$118.90	\$121.50	\$131.40	\$138.70	\$138.70	
Feb	115.50	118.90	121.50	131.70	138.70	138.50	
Mar	115,50	118.90	121.50	131.70	138.70	138.50	
Apr	115.50	118,96	123.50	131.70	138.70	138.50	
May							
June	115.50	116.50	125.60	131.70	138.70	138.50	
July	115.50	116.50	125.60	131.70	138.70	138.50	
Aug		116.50	131.40	131.70	138.70		
Sept		121.50	131.40		138.70		
Oct	115.50	121.50	131.40	138.50	138.50	138.50	
Nov	115.50	121.50	131.40	138.70		138.50	
Dec	115.50	121.50	131.40	138.70	138.70	138.50	
Average	115.50	118.96	126.66	133.94	138.70	138.51	
maximum and a second							

† U. S. Pipe and Foundry Index used.

BUTTWELD STEEL PIPE

At Pit	tsburgh,	Per	Net	Ton.	Carload	Lots
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	1948	1949	1950	1951	1952	1953
Jan	\$88.00	\$103.00	\$108.00	\$117.00	\$117.00	\$124.00
Feb	91.50	103.00	108.00	117.00	117.00	124.00
Mar	95.00	103.00	108.00	117.00	117.00	124.00
Apr	95.00	103.00	108.00	117.00	117.00	124.00
May	94.00	103.00	108.60	117.00	117.00	125.88
June	93.00	103.00	108.00	117.00	117.00	132.75
July	95.00	103.00	108.00	117.00	118.75	136.50
Aug	103.00	103.00	108.00	117.00	124.00	136.50
Sept	103.00	103.00	108.00	117.00	124.00	136.50
Oct	103.00	103.00	108.00	117.00	124.00	138.50
Nov	103.00	103.00	108.00	117.00	124.00	136.50
Dec	103.00	105.00	117.00	117.00	124.00	136.50
Average	97.21	103.17	108.75	117.00	120.06	131.14

	1954	1955	1956	1957	1958	1959
Jan	\$130.30	2141.20	\$102.00	2104100	\$11,0100	\$102.06
Feb	136.50	141.50	152.00	186.25	176.50	182.50
Mar	136.50	141.50	152.00	168.50	176.50	182.50
Apr	136.50		152.00			
May	136.50	141.50	152.00	168.50	176.50	182.50
June						
July	141.18	151.75	152.00	176.50	176.50	182.50
Aug		154.00	159.20	176.50	182.50	182,50
Sept		154.00	164.00	176.50	182.50	182.50
Oct	141.50	154.00	164.00	176.50	182.50	182.50
Nov	141.50	154.00	164.00	176.50	182.50	182.50
Dec						
Average	138.97	147.56	156.60	171.94	179.00	182.50

Computed from list discounts; 1-in. size std., T&C.

MANUFACTURER'S BRIGHT WIRE

At Pittsburgh, Cents Per Pound

	1948	1949	1950	1951	1952	1953	
Jan.	3.55	4.33	4.50	4.85	4.85	5.225	
Feb	3.65	4.33	4.50	4.85	4.85	5.225	
Mar.	3.55	4.22	4.50	4.85	4.85	5.225	
Apr	3.55	4.15	4.50	4.85	4.85	5.225	
May	3.60	4.15	4.50	4.85	4.85	5.225	
June	3.60	4.15	4.50	4.85	4.85	5.352	
July	3.77	4.15	4.50	4.85	4.925	5.525	
Aug	4.33	4.15	4.50	4.85	5.225	5.525	
Sept	4.33	4.15	4.50	4.85	5.225	5.525	
Oct	4.33	4.15	4.50	4.85	5.225	5.525	
Nov	4.33	4.15	4.50	4.85	5.225	5.525	
Dec.	4.33	4.29	4.85	4.85	5.225	5.525	
Average	3.90	4.20	4.53	4.85	5.012	5.386	
	1954	1955	1956	1957	1958	1959	
Jan	5.525	5.75	6.25	7.20	7.650	8.000	
Feb.	5.525	5.75	6.60	7.20	7.650	8.000	
Mar	5.525	5.75	6.60	7.20	7.650	8.000	
Apr	5.525	5.75	6.60	7.20	7.650	8.000	
May	5.525	5.75	6.60	7.20	7.650	8.000	
June	5.525	5.75	6.60	7.20	7.650	8.000	
July	5.735	6.125	6.60	7.65	7.650	8.000	
Aug	5.75	6.25	6.96	7.85	8.000	8.000	
Sept	5.75	6.25	7.20	7.65	8.000	8.000	
Oct	5.75	6.25	7.20	7.65	8,000	8.000	
Nov	5.75	6.25	7.20	7.65	8.000	8.000	
Dec	5.75	6.25	7.20	7.65	8.000	8.000	
Average	5.636	5.969	6.80	7.43	7.796	8.000	

STRUCTURAL STEEL SHAPES

At Pittsburgh, Cents Per Pound

	1948	1549	1950	1951	1952	1953	
Jan. Feb. Mar. Apr. May. June	2.80 2.80 2.80 2.80 2.75 2.75	3.25 3.25 3.25 3.25 3.25 3.25	3.40 3.40 3.40 3.40 3.40 3.40	3.65 3.65 3.65 3.65 3.65 3.65	3.65 3.65 3.65 3.65 3.65 3.65	3.85 3.85 3.85 3.85 3.85 3.96	
July Aug. Sept. Oct. Nov. Dec.	2.85 3.25 3.25 3.25 3.25 3.25	3.25 3.25 3.25 3.25 3.25 3.31	3.40 3.40 3.40 3.40 3.40 3.65	3.65 3.65 3.65 3.65 3.65 3.65	3.69 3.85 3.65 3.85 3.85 3.85	4.10 4.10 4.10 4.10 4.10 4.10	
Average	3.00	3.26	3.42	3.65	3.74	3.98	
Jan. Feb. Mar. Apr. May June	1954 4.10 4.10 4.10 4.10 4.10 4.10	1955 4.25 4.25 4.25 4.25 4.25 4.25	1956 4.60 4.60 4.60 4.60 4.60 4.60	1957 5.00 5.00 5.00 5.00 5.00 5.00	1958 5.275 5.275 5.275 5.275 5.275 5.275	1959 5.500 5.500 5.500 5.500 5.500 5.500	
July	4.24 4.25 4.25 4.25 4.25 4.25 4.17	4.51 4.60 4.60 4.60 4.60 4.60 4.41	4.60 4.84 5.00 5.00 5.00 5.00 4.75	5.275 5.275 5.275 5.275 5.275 5.275 5.275	5.275 5.500 5.500 5.500 5.500 5.500 5.500	5.500 5.500 5.500 5.500 5.500 5.500 5.500	

COLD-FINISHED STEEL BARS

At Pittsburgh, Cents Per Pound

	1946	1949	1950	1951	1952	1953
Jan	3.55	3.98	4.145	4.55	4.55	4,925
Feb	3.85	3.98	4.145	4.55	4.55	4.925
Mar	3.55	3.98	4.145	4.55	4.55	4.925
Apr	3.55	3.98	4.145	4.55	4.55	4.925
May	3.50	3.98	4.145	4.55	4.55	4.925
June	3.50	3.98	4.145	4.55	4.55	5.041
July	3.82	3.98	4.145	4.55	4.625	5.20
Aug	3.98	3.98	4.145	4.55	4.925	5.20
Sept	3.98	3.98	4.145	4.55	4.925	5.20
Oct	3.98	3.98	4.148	4.55	4.925	5.20
Nov	3.98	3.98	4.15	4.55	4.925	5.20
Dec	3.98	4.01	4.55	4.55	4.925	5.20
Average	3.74	3.98	4.179	4.55	4.712	5.072
	1954	1955	1958	1957	1958	1959
Jan	5.20	5.40	5.90	6.85	7.300	7,680
Feb	5.20	5.40	6.25	6.85	7.300	7,650
Mar	5.20	5.40	6.25	6.85	7.300	7,650
Apr	5.20	5.40	6.25	6.85	7.300	7.650
May	5.20	5.40	6.25	6.85	7.300	7.650
June	5.20	5.40	6.25	6.85	7.300	7.650
July	5.39	5.77	6.25	7.30	7.300	7.650
Aug	5.40	5.90	6.61	7.30	7.650	7.650
Sept	5.40	5.96	6.85	7.30	7.650	7.650
Oct	5.40	5.90	6.85	7.30	7.650	7.650
Nov	5.40	5.90	6.85	7.30	7.650	7.650
Dec	5.40	5.90	6.85	7.30	7.650	7.650
Average	5.30	5.63	6.48	7.08	7.446	7.650

STEEL RAILS AT PITTSBURGH, No. 1 OH

Including Prices by Months and Yearly Averages in Dollars Per 100 lb*

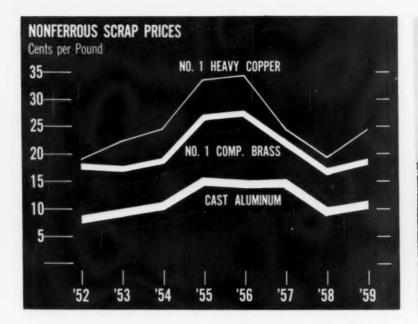
		- 3												-				
	1946	1947	1948	1949	1950	1951	1952			19	953	1954	1955	1956	1957	1958	1959	
Jan	\$43.00	\$2.50	\$2.75	\$3.20	\$3.40	\$3.60	\$3.60	J	an	. \$3.7	775	\$4.325	\$4.445	\$4,725	\$5.075	\$5.525	\$5.750	
Feb	43.19°	2.50	2.75	3.20	3.40	3.60	3.60	F	eb	3.7	775	4.325	4.445	4.725	5.075	5.525	5.750	
Mar.	43.39	2.50	2.75	3.20	3.40	3.60	3.60	n	Aar	3.7	775	4.325	4.445	4.725	5.275	5.525	5.750	
Apr.	43.39	2.50	2.75	3.20	3.40	3.60	3.60	A	pr	3.7	775	4.325	4.445	4.725	5.275	5.525	5.750	
May	43.39	2.50	2.70	3.20	3.40	3.60	3.60	l/	Aay	3.1	191	4.325	4.445	4.725	5.275	5.525	5.750	
June	43.39	2.50	2.70	3.20	3.40	3.60	3.60	J	une	. 4.1	181	4.325	4.445	4.725	5.275	8.525	5.750	
July	43.39	2.50	2.80	3,20	3.40	3.60	3,635		uly	4.3	325	4,442	4,665	4.725	5.525	5.525	5,750	
Aug.	43.39	2.75	3.20	3.20	3.40	3.60	3.775		ug.		325	4.445	4.725	5.135	5.525	5.525	5.750	
Sept.	43.39	2.75	3.20	3.20	3.40	3.60	3.775	S	ept.	4.3	325	4.445	4.725	5.075	5.525	5,750	5.750	
Oct.		2.75	3.20	3.20	3.40	3.60	3.775	0	Oct	. 4.3	325	4,445	4.725	5.075	5.525	5.750	5.750	
Nev.	43.39	2.75	3.20	3.20	3.40	3.80	3.775	P	lov	. 4.	325	4.445	4.725	5.075	5.525	5.750	5.750	
Dec.	47.36	2.75	3.20	3.28	3.60	3.60	3.775)ec	. 4.3	325	4,445	4.725	5.675	5.525	5.750	5.750	
Average	43.67	2.60	2.93	3.21	3.42	3.60	3.676		Averag	ge 4.	102	4.387	4.579	4.876	5.242	5.60	5.750	

^{*} Prices quoted dollars per gross ton prior to Feb. 15, 1946. Net ton, Feb. 15 to Dec. 13, 1946.

STAINLESS STEEL SHEETS

No. 304, Cents Per Pound

	1953	1954	1955	1956	1957	1958	1959
Jan	45,28	48,75	44.50	47.25	53,25	55.00	55.00
Feb	45.28	48,75	44.50	47.25	53.25	55.00	55.00
Mar	45.59	48.75	44.50	47.25	53.25	55.00	55.00
Apr	46.50	48.75	44.50	47.25	53.25	55.00	55.00
May	46.50	45.63	44.50	47.25	53.25	55.00	55.00
June	47.45	43.75	44.50	47.25	53.25	55.00	55.00
July	48.75	43.75	46.56	47.25	55.50	55.00	55.00
Aug	48.75	43.75	47.25	47.25	55.50	55.00	55.00
Sept	48.75	43.75	47.25	49.05	55.50	55.00	55.00
Oct	48.75	43.75	47.25	50.25	55.50	55.00	55.00
Nov	48.75	43.75	47.25	50.25	55.50	55.00	55.00
Dec	48.75	44.26	47.25	50.25	55.50	55.00	55.00
Average	47.43	45.62	45.81	48.15	54.38	55.00	55.00



Nonferrous Metals and Scrap



ALUMINUM SCRAP, CAST

Cents Per Pound, f.o.b. New York*

	1954	1955	1956	1957	1958	1959
Jan	8.88	11.50	17.25	11.12	10.38	10.00
Feb	8.50	12.94	17.25	10.37	10.25	9.75
Mar	8.85	14.75	17.25	10.25	10.25	9.75
Apr	10.25	14.63	18.88	10.62	9.88	9.75
May	11.00	12.85	14.05	10.75	9.75	9.75
June	10.00	12.00	11.50	10.75	9.25	10.38
July	10.00	14.38	12.50	10.75	9.25	11.20
Aug	10.00	16.50	13.00	11.15	9.31	11.50
Sept	10.75	17.10	13.50	11.25	9.50	11.50
Oct	11.00	17.13	13.00	11.15	9.50	11.50
Nov	11.00	17.13	11.75	10.87	9.88	11.50
Dec	11.00	17.13	12.25	10.75	9.75	11.75
Average	10.10	14.84	14.18	10.82	9.75	10.69

^{*} Dealers' Buying Price.

BRASS SCRAP, No. 1 COMP

Cents Per Pound, f.o.b. New York*

	1954	1955	1956	1957	1958	1959
Jan	16.44	21.31	31.50	24.12	15.25	17.00
Feb	15.75	23.19	31.50	21.75	17.75	17.81
Mar	17.00	24.10	33.60	20.75	14.38	19.69
Apr	17.75	25.88	32.12	21.12	14.75	20.20
May	18.88	24.90	27.00	20.95	14.75	19.25
June	19.25	24.94	23.75	20.12	16.00	19.00
July	19.25	26.69	24.00	18,75	15.95	17.75
Aug	19.25	28.81	25.50	18.60	19.94	17.88
Sept.	19.44	30.25	28,00	16.69	15.75	18.56
Oct	20.03	29.31	25.75	16.15	17.15	18.85
Nov	20.70	30.30	23.75	16.00	17.50	19.50
Dec	21.00	31.75	24.00	15.75	17.75	18.75
Average	18.73	26.79	27.37	19.23	16.41	18.69

^{*} Dealers' Buying Price.

No. 1 HEAVY COPPER SCRAP

Cents Per	Pour	d, f.o	.b. Ne	w Yo	rk*	
	1954	1955	1956	1957	1958	1959
Jan	22.63	27.00	41.00	26.63	17.81	22.50
Feb Mar	23.50	30.15	43.40	23.75	16.94	25.94
Apr	24.63	31.44	40.75 35.30	24.09 23.60	17.85	25.38
June	24.75	33.00	31.25	22.75	19.81	25.06
July	24.75	33.75	30.13	21.25	20.05 19.96	23.15
Sept	24.94	38.65	31.38	18.28	19.56	24.69

^{*} Dealers' Buying Price.

BRASS INGOTS, 85-5-5-5

No. 115,	Cents	Per P	ound,	Cars*		
	1954	1955	1956	1957	1958	1959
Jan	24.50	30.38	42.00	34.75	26.38	28.00
Feb		32.81	42.00	32.25	25.75	28,50
Mar	23.50	33.80	44.00	31.50	24.88	30.81
Apr		37.00	43.50	31.50	25.00	31.25
May		35.30	40.60	31.10	25.25	30.25
June		34.50	36.25	30.25	26.31	30.25
July	27.00	38.50	35.50	29.50	27.00	29.65
Aug	27.45	39,19	37.75	29.35	27.00	29.25
Sept		42.50	37.75	27.62	27.00	30.38
Oct	29.19	41.75	37.06	27.35	28.40	29,25
Nov	29.50	41.75	35.00	26.75	28.00	30.38
Dec	30.00	42.00	35.00	26.75	27.75	30.75
Augenes	20 00	DOT 190	20 70	06.00	00.80	00.00

^{*} Delivered.

INGOT BRASS AND BRONZE

Short Tons of Shipments, Monthly

	1955	1956	1957	1958	1959
Jan	25,201	27,736	25,681	20,468	22.046
Feb	25,349	24,949	20,769	17,413	23,746
Mar	29,713	28,310	21,948	18.825	26,109
Apr	27,841	25,808	23,507	18,009	26,115
May	23,708	23,437	22,037	17,191	23,967
June	23,141	18,842	18,888	17,962	22,922
July	18,513	17,384	16,695	16,658	20.346
Aug	27,013	23,812	19,654	17,882	21,741
Sept	26,349	20,929	19,670	20,540	22,685
Oct	25,228	23,045	22,800	23,225	23,067
Nov	25,102	21,818	19,767	20,758	21,100*
Dec	21,448	18,046	16,875	18,676	20,130°
Total	298,406	274,096	248,291	227,607	273,974°

^{*} Estimate. Source: Brass & Bronze Ingot Institute.

BRONZE INGOTS, 88-10-2

No. 24!	, Cents	Per	Pound,	Car	s*	
	1954	1955	1956	1957	1958	1959
Jan Feb	28.75 28.50 31.94 32.75	35.13 37.56 38.95 42.25 40.55 39.75	48.75 48.75 50.75 50.25 46.80 42.25	39.50 38.62 35.50 35.50 35.10 34.22	29.88 29.25 28.38 28.50 28.75 30.00	32.25 33.00 36.75 36.00 35.00 35.00
July Aug Sept Oct Nov Dec Avera	33.25 33.40 33.69 34.50 34.75	41.75 45.50 48.75 48.00 48.00 48.75 42.91	41.50 43.50 43.50 42.63 40.00 40.00 44.89	33.50 33.35 31.25 30.85 30.25 30.25 30.25	30.75 30.75 30.75 32.15 32.25 32.25 30.30	34.10 33.50 34.63 33.50 36.88 36.00 34.72
	-					

^{*} Delivered.

CADMIUM PRICES, STICKS, BARS

Dollars Per Pound, I to 5-Ton Lots

pomers tot tound! I to a ton Bott	
June 15, 1950 to September 10, 1950	2.18
September 11, 1950 to November 30, 1950	2.40
December 2, 1950 to May 26, 1952	2.55
May 27, 1952 to August 5, 1952	2.28
August 6, 1952 to November 30, 1952	2.00
December 1, 1952 to December 13, 1952	1.50-2.00
December 13, 1952 to January 24, 1953	1.75-2.00
January 26, 1953 to January 31, 1954	2.00
February 1, 1954 to December 25, 1957	1.70
December 26, 1957 to September 30, 1958	1.55
October 1, 1958 to April 5, 1959	1,48
April 6, 1959 to October 7, 1959	1.30
October 8, 1959 to December 31, 1959	1.40

COBALT, 97 TO 99 PCT.

Per Pound, 100 lb Lots Since 1947

April 1, 1949 to December 31, 1950	\$1.80
January 2, 1951 to October 1, 1951	2.10
October 1, 1951 to October 31, 1953	2.40
November 2, 1953 to December 5, 1956 \$2.60 to	0 2.67
December 6, 1956 to February 13, 1957 2.35 1	0 2.42
February 14, 1957 to February 11, 1959 2.00	0 2.07
February 12, 1959 to December 31, 1959 1.75	0 1.82

A weekly column on the nonferrous market as well as complete nonferrous and metal powder prices are a regular Iron Age feature.

REMELT ALUMINUM INGOT

No. 12. Cents Per Pound, Cars*

140. 12,	Ceura	Let L	ouna,	Cars.		
	1954	1955	1956	1957	1958	1959
Jan	. 19.38	23.44	32.00	23.31	22,19	21.75
Feb	. 18.66	25.98	30.63	22.62	21.50	21.75
Mar	. 19.18	29.65	30.10	22.81	21.38	21.75
Apr	. 20.75	29.38	30.25	22.69	21.34	21.75
May	. 20.38	26.70	27.00	21.70	21.36	21.75
June		25.00	24.63	21.31	21.38	21.75
July	. 19.50	26.69	25,19	22.09	21.38	23.35
Aug	. 19.78	29.69	27.44	23.00	21.75	23,75
Sept		30.35	27.25	22.69	21.75	23.75
Oct	. 20.81	30.75	25.75	22.55	21.75	23.75
Nov	. 20.88	31.00	24.07	22.50	21.75	23,75
Dec	. 21.13	31.25	24.25	22.50	22.00	24.00
Averag	e 20.00	28.41	27.38	22.48	21.63	22.74

^{*} Delivered.

NONFERROUS

STRAITS TIN, PROMPT PRICE

Cents Per	Poun	d, at	New	York		
	1948	1949	1950	1951	1952	1953
Jan. Feb. Mar. Apr. May June	94.00 94.00 94.00 94.00 94.00 \$1.03	\$1.03 \$1.03 \$1.03 \$1.03 \$1.03 \$1.03	75.75 74.50 75.62 76.38 77.50 77.70	\$1.72 \$1.83 \$1.45 \$1.46 \$1.40 \$1.18	\$1.097 \$1.215 \$1.215 \$1.215 \$1.215 \$1.215	
July Aug. Sept. Oct. Nov. Dec. Average	\$1.03 \$1.03 \$1.03 \$1.03 \$1.03	\$1.03 \$1.03 \$1.02 95.49 90.11 79.06 99.22	89.88 \$1.02 \$1.01 \$1.13 \$1.38 \$1.45 95.53	\$1.06 \$1.03 \$1.03 \$1.03 \$1.03 \$1.03 \$1.27	\$1.215 \$1.212 \$1.213 \$1.212 \$1.213 \$1.213 \$1.215 \$1.204	81.90 80.71 82.36 80.86 83.11 84.61 95.79

Jan.,	84.83	87.28	104.82	101.53	92.94	99.41
Feb	85.04	90.78	100.78	101.06	93.90	102.79
Mar	91.88	91.04	100.67	99.70	94.42	103.03
Apr	96.13	91.40	99.27	99.30	92.95	102.50
May	93.51	91.37	97.01	98.29	92.95	103.07
June .	94.19	93.64	94.19	98.06	94.49	103.84
July	96,54	96.82	96,24	96.55	94.89	102.31
Aug	93.39	96.46	99.08	94.26	94.99	102.33
Sept.	93.52	96.26	103.83	93.44	94.05	102.43
Oct	93.05	96.09	106.87	91.89	96.46	102.21
Nov	91.14	97.87	110.91	89.23	99.24	100.99
Dec	88.57	107.76	108.00	92.38	98.99	99.46
Average	91.82	94.73	\$1.018	96.31	95.17	102.03

1954 1955 1956 1957 1958 1959

ANTIMONY, U. S. METAL

Cents Per	Pour	d, F.0	D.B. L	aredo,	Tex.	
	1954	1955	1956	1957	1958	1959
Jan., Feb., Mar., Apr., May, June,	28.50 28.50 28.50 28.50 28.50 28.50	28.50 28.50 28.50 28.50 28.50 28.50	33.50 33.50 33.50 33.50 33.50 33.50	33.50 33.50 33.50 33.50 33.50 33.50	33.50 31.50 29.50 29.50 29.50 29.50	29.50 29.50 29.50 29.50 29.50 29.50
July	28.50 28.50 28.50 28.50 28.50 28.50 28.50	28.50 29.75 33.50 33.50 33.50 33.50 30.27	33.50 33.50 33.50 33.50 33.50 33.50	33.50 33.50 33.50 33.50 33.50 33.50	29.50 29.50 29.50 29.50 29.50 29.50	29.50 29.50 29.50 29.50 29.50 29.50 29.50

MAGNESIUM, 99.8 PCT INGOT

Cents	Per	ound,	at	Freeport,	Tex.	
1933	28.0		42.	22.50	1951	

1933	28.00	1942 22.50	1951	24.50
1934	26.00	1943. 20.50	1952	
1935	30.00	1944 20.50	1953	26.94
1936	30.00	1945 20.50	1954	27.75
1937	30.00	1946 20.50	1955	30.44
1938	30.00	1947 20.50	1956	36.00
1939	27.00	1948 20.50	1957	38.00
1940	27.00	1949 20.50	1958	36.00
1941	27.00	1950 22.02	1959.	36.00

Prices: Straits tin, electrolytic copper, nickel, aluminum, antimony and U.S. primary aluminum production.

ELECTROLYTIC COPPER

Cents Per Pound, Conn. Valley

001113 1 01	10011	101 00				
	1948	1949	1950	1951	1952	1953
Jan	21.50	23.50	18.50	24.50	24.50	24.50
Feb.	21.50	23.50	18.50	24.50	24.50	25.41
Mar.	21.50	23.49	18.50	24.50	24.50	30.58
Apr.	21.50	21.72	18.94	24.50	24.50	30.70
May		18.05	19.92	24.50	24.50	29.85
June	21.50	16.66	22.27	24.50	24.50	29.88
July	21.50	17.33	22.50	24.50	24.50	29.88
Aug.	23.43	17.63	22.54	24.50	24.50	29.39
Sept.	23.50	17.63	23.25	24.50	24.50	29.50
Oct.	23.50	17.63	24.50	24.50	24.50	29.61
Nov	23.50	18.42	24.50	24.50	24.50	29.75
Dec	23.50	18.50	24.50	24.50	24.50	29.75
Average	22.33	19.51	21.54	24.50	24.50	29.07
	1954	1955	1956	1957	1958	1950
Jan	29.75	30.17	43.00	36.00	25.69	29.00
Feb	29.75	33.00	44.026	33.14	25.00	29.94
Mar	29.87	33.22	46.00	32.14	25.00	31.14
Apr	29.97	36.00	46.00	32.00	25.00	31.50
May	30.00	36.00	46.00	32.00	25.00	31.50
June	30.00	36.00	46.00	30.90	25.26	31.50
July	30.00	36.00	41.68	29.25	26.02	30.52
Aug	30.00	38.26	40.00	28.72	26.50	30.00
Sept.	30.00	43.00	40.00	27.00	26.50	30.57
Oct	30.00	43.00	39.33	27.00	27.61	30.57
Nov	30.00	43.00	36.00	27.00	29.00	32.50
Dec	30.00	43.00	36.00	27.00	29.00	33.00°
Average	29.95	37.55	42.00	30.27	26.30	30.98°

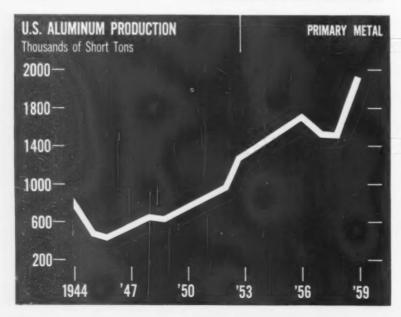
^{*} Estimate.

U. S. PRODUCTION OF PRIMARY ALUMINUM (Short tons)

	1951	1952	1953	1954	1955	1956	1957	1958	1959
Jan.	67,954	76,934	89.895	116,247	128,203	140.394	147,029	139,910	158,701
Feb.	62,740	72,374	92,649	110.483	116,236	132,763	119.059	121,980	142,116
Mar.	70,022	77,069	104,920	122,339	130,272	145,895	135,706	134.019	157,189
Apr.	67,701	76,880	102,071	120,431	126,394	144,726	139,152	124,999	155,213
May	67,720	80,804	105,477	125,144	131,128	150,800	145,174	126,327	163.857
June	67,454	77,476	104,152	120.758	127.633	145,726	138,007	115.326	167.323
July	72,698	78,368	109,285	126,162	132.667	151.624	142,041	118.541	179,194
Aug.	73,816	85,175	110.545	125,296	133,551	92,406	143,448	125,416	172.817
Sept.	69,429	76,882	109,333	120,332	130,606	132,316	129,277	124,713	168,205
Oct.	72,647	77,312	108,219	125,089	134,656	149,125	133,750	137,419	173,762
Nov.	72,246	74,639	105,637	121,252	133.689	145,081	135.024	140.962	153,666
Dec.	72,454	83,409	110,291	127,035	140,748	148,391	140.038	152,301	154,957°
Total	836.881	937,321	1,252,015	1,458,500	1.565.783	1,678,954	1.647.712	1.565.556	1.945.000*

^{*} Estimate.

Source: U. S. Bureau of Mines and Aluminum Association.



ELECTROLYTIC NICKEL

Cents Per Pound, New York, Duty Paid

July 22, 1948 to Feb. 15, 1949	42.90
Feb. 16, 1949 to Oct. 4, 1949	42.93
Oct. 5, 1949 to May 31, 1950	
June 1, 1950 to Dec. 12, 1950	51.22
Dec. 13, 1950 to June 1, 1951	53.55
June 2, 1951 to Jan. 13, 1953	50.58
Jan. 14, 1953 to Nov. 23, 1954	63.08
(F. O. B., Port Colbourne, Canada)	
Nov. 24, 1954 to Dec. 5, 1956	64.50
Dec. 6, 1956 to Dec. 31, 1959	74.00

ALUMINUM 99 PCT INGOT

Cents Per Pound, Freight Allowed

	1948	1949	1950	1951	1952	1953
Jan	15.00	17.00	17.00	19.00	19.00	20.23
Feb.	15.00	17.00	17.00	19.00	19.00	20.50
Mar.	15.00	17.00	17.00	19.00	19.00	20.50
Apr	15.00	17.00	17.00	19.00	19.00	20.50
May	15.00 15.00	17.00	17.20	19.00	19.00	20.50
June	13.00	17.00	17.00	19.00	18.00	20.30
July	16.00	17.00	17.50	19.00	19.00	20.94
Aug	16.00	17.00	17.50	19.00	20.00	21.50
Sept.	16.00	17.00	17.69	19.00	20.00	21.50
Oct	16.70	17.00	19.00	19.00	20.00	21.50
Nov	17.00	17.00	19.00	19.00	20.00	21.50
Dec.	17.00	17.00	19.00	19.00	20.00	21.50
Average	15.66	17.00	17.70	19.00	19.42	20.93
	1954	1955	1956	1957	1958	1959
Inn	21.50	22.83	24.40	27.10	28.10	26.E0
Feb.	21.50	23.20	24.40	27.10	28.10	26.80
Mar	21.50	23.20	24.50	27.10	28.10	26.80
Apr	21.50	23.20	25.90	27.10	26.10	26.80
May	21.50	23.20	25.90	27.10	26.10	26.80
June	21.50	23.20	25.90	27.10	26.10	26.60
July	21.50	23.20	25,90	27.10	26.10	26.80
Aug.	22.08	24.40	26.70	28.10	26.80	26.80
Sept	22.20	24.40	27.10	28.10	26.80	26.80
Oct	22.20	24.40	27.10	28.10	26.80	26.80
Nov	22.20	24.40	27.10	28.10	26.80	26.80
Dec	22.20	24.40	27.10	28.10	26.80	26.93
Average	21.78	23.67	26.00	27.52	26.64	26.81

^{*} Estimate.

Metal Powders



IRON POWDER PRICES

Cents Per Pound, Averaged Monthly

Sponge, 98+Pct Fe, Carload Lots.	Electrolytic, Domestic, 99.5+Pct Fe.
-100 Mesh	-100 Mesh
16.98	44.0
16.35	40.75
9.5	36.5
9.5	36.5
9.50	36.5
11.25	29.50 to 33.00
11.50	34.50
	98+Pct Fe, Carlead Lots, -100 Mesh 16.98 16.35 9.5 9.5 9.50 11.25

Prices: Lead, zinc . . . U. S. primary magnesium production . . . Metal powder prices including iron and copper.

LEAD PRICE, COMMON GRADE

Cents Per Pound, at St. Louis

	1947	1948	1949	1950	1951	1952	1953
lan	13.00	15.00	21.50	12.00	17.00	19.00	14.19
eb.	13.25	15.00	21.50	12.00	17.00	19.00	13.50
Vlar.	15.00	15.00	18.98	10.96	17.00	19.00	13.40
Apr	15.00	17.21	15.15	10.63	17.00	18.91	12.64
May	15.00	17.50	13.72	11.72	17.00	15.73	12.74
June	15.00	17.50	12.00	11.81	17.00	15.08	13.41
luly	15.00	17.80	13.56	11.66	17.00	16.00	13.68
Aug	15.00	19.50	14.99	12.93	17.00	16.00	14.00
Sept.	15.00	19.50	15.05	15.80	17.00	16.00	13.74
Oct	15.00	19.50	13.42	16.00	18.93	14.40	13.50
Nov	15.00	21.50	12.52	17.00	19.00	14.18	13.50
Dec	15.00	21.50	12.00	17.00	19.00	14.13	13.50
Average	14.69	18.04	15.37	13.29	17.49	16.45	13.48
	1954	1955	195	6 19	957	1958	1959
Jan.	13.26	15.00	15.9	6 15	.80 1	2.80	12.42
Feb.	12.82	15.00	15.8	0 15	.80 1	2.80	11.42
Mar	12.94	15.00				2.80	11.30
Apr	13.91	15.00				1.85	11.01
May	14.00	15.00				1.52	11.70
June	14.11	15.00	15.8	0 14	.12 1	1.04	11.80
July	14.00	14.90	15.8			0.80	11.80
Aug	14.06	14.80				0.65	12.09
Sept.	14.60	14.94				83.0	12.80
Oct	14.98	15.30				2.47	12.80
Nov	15.00	15.30				2.80	12.80
Dec	15.00	15.30		-		2.80	12.54
Average	14.06	15.05	15.8	19 19.0	.45 1	1.92	12.02

COPPER POWDER PRICE

Cents per lb. F.O.B. Mill-100 Mesh

Electrolytic

43.50

53.37

60.50

45 67

41.25

48.25

U. S. PRODUCTION OF PRIMARY MAGNESIUM

-				-			
6	ь	-	6	1	0	m	

Month	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	
January	833	988	1.002	1.876	7,425	9,908	6,446	5.089	6,337	7,391	5.272	1.877	
February	830	884	913	1,709	7.794	9.078	5.856	4.646	5,908	6,617	3,526	1.725	
March	887	988	948	1,885	8,893	10,352	6.545	4.942	6,347	7,383	3,235	1,925	
April	801	958	957	2,043	8,800	9,751	6,203	1,859	6,081	7,222	2,772	1,808	
May	797	987	972	2,194	9,093	9,116	6,460	4.277	6,359	7,227	2,469	2,668	
June	766	950	1,175	2,512	8,670	7,286	6,190	4,757	6,098	6,718	1,784	2,778	
July	792	985	1,132	2,998	9,529	6,207	6,049	5,112	1,138	6.598	1,799	2,850	
August	809	970	1,400	3,418		6,265	5,771	5,880	2,314	6,958	1,845	2,967	
September	819	974	1,635	4,186	8,422	6.076	5,325	5,923	6,128	6,296	1,791	2.846	
October	873	941	1,690	5,147	8,990	6,341	5,149	6,296	6,735	6,276	1,927	3,018	
November	814	969	1.760	6,043	9,123	6,227	4,942	6,130	6,818	5,823	1,814	3,100°	
December	932	1,004	1,942	6,923	9,323	6.487	4,788	6,230	7,085	5.648	1,862	2,900°	
Total	10,003	11,598	15,726	40,914	105,833	93,075	69,724	61,131	68,346	78,865	30,096	32,427°	

Producers' reports to Bureau of Mines and Magnesium Assn.

† Estimates.

PRIME WESTERN ZINC PRICE

* Domestic.

* Estimate.

SHIPMENTS OF IRON AND IRON-BASE POWDER

Total Net Tons, Major Classes*

	Total	Bearings and Parts	Friction Materials	Electronics & Magnetic Applications	Miscel-	Welding Electrodes - Flame Cutting
1947	3,115	1,560	30	600	845	2000
1948	3,520	1,685	23	990	820	
1949	3,235	1.746	14	935	540	
1950	3,942	1,570	23	1,611	738	
1951	3,651	2.150	1.5	900	600	
1952	4,048	2,109	1.0	336	1,602	
1953	6,255	3,457	14.4	1,599	1,189	
1954	7,835	3,445	75.0	905	3,410	
1955	20,724	9,990	99.5	1,097.5	9.537	
1956	22,195	8,900	144.5	1.071	12,030	
1957	25,389	11,893	217.5	970	1,172	11,137
1958	21,479	9,944	141.0	1.425	966	9,003
1959†	34,140	18,612	180.0	1,596	1,320	12,432

1954 Average

1957 Average.

1958 Average . .

1959 Average

1955 Average

1956 Average

Net Tons

1851. 12,850
1852. 5,827
1853. 6,964
1854. 9,835
1855. 10,986
1856. 10,125
1857. 5,000
1858. 557
1859. 618*

IMPORTS OF IRON POWDER

Cents Per Pound, at E. St. Louis

	1947	1946	1949	1950	1951	1952	1953		1954	1955	1956	1957	1958	1959
Jan	11.005	11.69	18.18	9.48	18.22	20.29	13.43	Jan	10.26	12.00	13,44	13.50	10.00	11.50
Feb	11.005	12.61	18.20	10.47	18.22	20.29	12.31	Feb.	9.88	12.00	13.50	13.50	10.00	11.42
Mar	11,005	12.61	17.76	10.66	18.22	20.29	11.86	Mar	10.18	12.00	13.50	13.50	10.00	11.00
Apr	11.005	12.61	14.76	11.41	18.25	20.29	11.83	Apr	10.75	12.43	13.50	13.50	10.00	11.00
May	11.005	12.64	12.58	12.71	16.25	20.33	11.83	May	10.79	12.50	13.50	11.93	10.00	11.00
June	11.005	12.65	10.27	15.49	16.25	16.57	11.83	June	11.46	12.75	13.50	10.84	10.00	11.00
July	11.005	13.09	10.06	15.72	18.25	15.83	11.67	July	11.50	13.00	13.50	10.00	10.00	11.00
Aug	11.005	15.65	10.70	15.72	T8.26	14.88	11.53	Aug	11,50	13.00	13.50	10.00	10.00	11.00
Sept	11.005	15.65	10.77	17.82	18.29	14.88	10.68	Sept	11.98	13,40	13.50	10.00	10.00	11.33
Oct	11.03	15.74	10.04	18.22	20.22	14.08	10.50	Oct	12.00	13.50	13.50	10.00	10.87	12.21
Nov	11.06	17.27	10.46	18.22	20.29	13.33	10.50	Nov	12.00	13.50	13.50	10.00	11.42	12.50
Dec	11.06	18.15	10.47	18.22	20.29	13.33	10.50	Dec	12.00	13.50	13.50	10.00	11.50	12.50
Avg.	11.02	14.20	12.85	14.51	18.75	17.03	11.54	Average	11.19	12.79	13.49	11.39	10.32	11.46

COPPER AND COPPER-BASE POW-DER SHIPMENTS, FLAKE AND GRANULAR

Net		F	0	n	S																
1952.																					15,00
1953.																					17,00
1954.	+																				14,80
1955.																					21,50
1956.		- '																			19,00
1957. 1958.																					18.00
1959																					24,50

* Iron Age estimate.

Hydrogen

Reduced

43.50

53.37

50.50

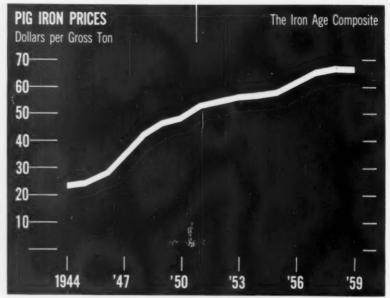
49.75

48.8

43.25

Pig Iron and Iron Ore





COMPOSITE PIG IRON PRICE

Average of THE IRON AGE quotations on basic pig iron at Valley furnaces and foundry Iron at Chicago, Birmingham, Buffalo, Valley and Philadelphia, in gross tons.

	1939	1940	1941*	1945*	1946	1947		1948	1949	
Jan	\$20.61	\$22.61	\$23,45	\$23,61	\$25.37	\$30.14	Jan \$	39.83	\$46,79	2
Feb	20.61	22.61	23,45	23.88	25.37	30.15		40.27	46.74	-
Mar	20.61	22.61	23.53	24.61	25.75	32.92		40.32	46.74	4
Apr	20.61	22.61	23.61	24.61	26.12	33.15		40.11	46.64	-
May	20.61	22.61	23.61	24.61	26.45	33.15	May		45.97	4
June	20.61	22.61	23.61	24.61	28.13	33.15	June		45.91	4
July	20.61	22.61	23.61	24.61	28.13	34.52	July	42.25	45.91	-
Aug		22.61	23.61	24.61	28.13	36.84	Aug		45.91	6
Sept		22.61	23.61	24.61	28.13	38.95	Sept		45.90	4
Oct		22.61	23.61	24.80	28.13	38.95	Oct		45.68	6
Nov	22.61	22.61	23.61	25.37	28.13	37.04		46.82	45.88	-
Dec.		22.95	23.61	25.37	29.64	37.06	Dec		45.88	1
Average	21.19	22.64	23.58	24.61	27.29	34.34	Average		46 18	i

alley furt	aces and	Toundry	ron	at Can	cage,	Birmingham,	Buttalo, Val	ley and	Philad	elphia,	in gross	tens.	
	1948	1949	1950	1951	195	2 1953		1954	1955	1956	1957	1958	1959
lan	\$39.83	\$46.79	\$45.98	\$52.69	\$52.7	2 \$55.26	Jan	\$56.59	\$56.59	\$59.09	\$62.90	\$86.42	\$66.41
eb	. 40.27	46.74	46.38	52.69	52.7	2 55.26	Feb	56.59	56.59	59.09	62.90	66.45	66,41
Vlar	40.32	46.74	46.38	52.69	52.7	2 55.26	Mar	56.59	56.59	59.25	64.56	66,49	66.41
Apr		46.64	46.38	52.69	52.7	2 55.26	Apr		56.59	60.29	64.56	66.49	66.41
Way		45.97	48.38	52,69	52.7	7 55.26	May		56.59	60.29	64.56	66.49	66,41
lune		45.91	46.38	52.60	52.7	7 55.32	June		56.59	60.29	64.56	66.49	66.41
luly	. 42.25	45.91	46.38	52,69	53.2	7 56.73	July	56.59	58.46	60.33	65.37	66.49	66.41
Aug		45.91	46.56	52,69	55.2	6 56.76	Aug		59.09	63.02	66.40	66.49	66.41
Sept		45.90	47.16	52,69	55.2	6 56.66	Sept		59.09	63.04	66.42	66.41	66.41
Oct		45.88	49.29	52.72	55.2	6 56.59	Oct		59.09	63.84	66.42	66,41	66.41
Vov		45.68	49.89	52.72	55.2	6 56.59	Nev		59.09	63.04	66.42	66.41	66.41
Dec		45.88	52.50	52.72	55.2	6 56.59	Dec		59.09	63.64	66.42	66.41	66.41
Avera		46.18	47.85	52.70	53.8	2 55.96	Average		57.78	61.15	65.15	66.45	66.41

^{*} Price unchanged at \$23.61 from 1942 through 1944.

PRODUCTION OF PIG IRON AND FERROALLOYS, Net Tons

* Including ferroalloys produced in electric furnaces. † Iron Age estimate.

				PIG IRON			
Year 1959	Basic	Bessemer	Low Phosphorus	Foundry	Malleable	All Other, Including Direct Castings	Total Pig Iron 60,400,000i
1958	.49,114,646	3,599,873	320,278	1,606,028	2,304,904	211.978	57,157,707
1957	65,377,744	6,344,106	580.013	2,279,256	3,459,331	334.928	78,375,378
1956	61,638,748	6,664,957	504,189	2.398.346	3,467,117	395,132	75.068.489
1955	62,484,889	7,436,354	263,036	2.754.641	3,531,420	387,077	76,857,417
1954	47,023,175	5,652,503	211,893	2,273,032	2,629,862	202,283	57,965,548
1953	59,882,512	8,110,881	297,065	2,500,996	3,784,458	325.517	74,901,429
1952	47,511,189	7,445,715	307,478	2,670,210	3,120,168	258,178	61,312,938
1951	54,212,500	9,045,954	314,725	3,050,626	3,363,369	287,095	70,274,278
1950	49,880,440	8,090,608	335,418	2,806,247	3,181,043	293,151	64,586,907
1949	40,905,356	7,059,416	301,520	2,503,912	2,409,436	232,922	53,412,562
1948	46,315,064	7,731,530	384,425	2,769,510	2,590,656	264,031	60,055,216
1947 1946	44,804,743	7,182,207	331,118	2,953,405	2,874,752	182,687	58,328,912
1945	33,727,655 39,886,982	5,932,414 8,255,513	167,013 314,063	2,545,938 2,248,887	2,190,285 2,350,078	215,493 187,648	44,778,796 53,223,169

FEHHUA	FF012.	
Ferrosilicon and Silvery Pig Iron	All Other Ferroalleys	Tetal Ferroalloys
448, 296	523,896	1,800,000† 1,650,587
721,139	666,178	2,422,907
809,285	729,678	2,506,969
803,281	647,993	2,406,448
636,694	454,587	1,840,694
	569,152	2,348,739
		2,041,017
		2,174,265
		1,813,404
		1,504,223
		1,856,343
		1,788,407
724,141 817,840	171,933	1,421,030 1,695,860
	Ferrosilicon and Silvery Pig Iron 448, 296 721, 139 809, 285 803, 281 636, 694 772, 339 749, 059 919, 085 839, 667 667, 325 802, 976 724, 141	and Silvery Pig Iron Ferroalisys 448, 296 823, 596 721, 139 866, 178 809, 285 627, 983 803, 281 647, 983 803, 694 454, 587 772, 339 569, 152 749, 059 471, 150 919, 085 389, 375 839, 667 196, 856 667, 322 181, 372 842, 385 206, 845 802, 976 184, 706 724, 141 156, 628

Source: American Iron and Steel Institute.

CANADIAN BLAST FU	IRNACE PRODUCTION,	Net Tons	Including	Ferroalloys
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Year	Pig Iron	Ferroalloys	Total	Year	Pig Iron	Ferroalloys	Total	Year	Pig Iron	Ferroalloys	Total
1936	759,618 1.006,717	87,679 91,931	847,297 1.098,648	1944		171,323 186,978	2.023,951	1952		232,036 150,595	2,914,101
1938		59,720 85,531	849,430 931,949	1946	1,403,758	116,995 149,832	1,520,753	1954	2.213,433	109,833 186,682	2,323,266
1940	1,309,161	151,661 213,218	1,460,822	1948	2,120,909	250,659	2,371,568	1956	3,568,196	242,164	3,810,366 3,948,186
1942	1.975,015	213,636 197,084	2,188,651 1,955,363	1949 1950 1951	2,309,732	211,603 181,575 250,930	2,491,307 2,803,626	1958	3,060,962	230,031 110,754 125,000	3,171,716 4,293,000

* Estimated

Source: Dominion Bureau of Statistics.

Prices: Foundry iron at Buffalo, Chicago, Granite City and Birmingham . . . Basic iron Valley . . . Valley malleable.

CHICAGO FOUNDRY PIG IRON

Per Gross	Ton,	at Fi	irnace			
	1948	1949	1950	1951	1952	1953
Jan	\$38.75	\$46.50	\$46.50	\$52.50	\$52.50	\$55.00
Feb	39.00	46.50	46.50	52.50	52.50	55.00
Mar	39.00	46.50	46.59	52.50	52.50	55.00
Apr	39.00	46.50	46.50	52.50	52.50	55.00
May	39.00	46.50	46.50	52.50	52.50	55.00
June	39.00	46.50	46.50	52.50	52.50	55.00
July	42.00	46.50	46.50	52.50	53.00	56.50
Aug	38.00	46.50	46.50	52.50	55.00	56.50
Sept	43.00	46.50	47.50	52.50	55.00	56.50
Oct	46.50	46.50	49.50	52.50	55.00	56.50
Nov	46.50	46.50	49.50	52.50	55.00	56.50
Dec	46.50	46.50	52.50	52.50	55.00	56.50
Average	41.77	46.50	47.58	52.50	53.75	55.75
	1954	1955	1956	1957	1958	1959
Jan	\$56.50	\$56,50	\$59.00	\$63.00	\$66,50	\$66.50
Feb	56.50	56.50	59.00	63.00	66.50	66.50
Mar	56.50	56.50	59.00	65.00	66,50	66,50
Apr	56.50	56.50	60.50	65.00	66.50	88.50
May	56.50	56.50	60.50	85.00	66.50	66.50
June	56.50	56.50	60.50	85.00	66.50	86.50
July	56.50	58.37	60.50	66.50	66.50	66.50
Aug	56.50	59.00	61.13	66.50	66.50	68.50
Sept.	56.50	59.00	63.00	66.50	66.50	66.50
Oct	56.50	59.00	63.00	66.50	86.50	66.50
Nov	56.50	59.00	63.00	66.50	66.50	66.50
Dec	56.50	59.00	63.00	66.50	66.50	66.50
Average	56.50	57.69	61.01	65.42	66.50	66.50

GRANITE CITY, ILL., PIG IRON

Foundry, Gross Ton, at Furnace

	1948	1949	1950	1951	1952	1953
Jan	\$39.25	\$48,40	\$48.40	\$54.40	\$54,40	\$56.90
Feb	40.00	48.40	48.40	54.40	54.40	56.90
Mar	40.00	48.40	48.40	54.40	54.40	56.90
Apr	40.00	48.40	48,40	54.40	54.40	56.90
May	41.43	48.40	48,40	54.40	54.40	56.90
June	45.75	48.40	48.40	54.40	54.40	56.90
July	45.75	48.40	48.40	54.40	54.90	58.40
Aug	47.34	48.40	48.40	54.40	56.90	58.40
Sept.	48.40	48.40	48.40	54.40	56.90	58.40
Oct	48.40	48.40	51.40	54.40	56.90	58.40
Nov	48.40	48.40	51.40	54.40	56.90	58.40
Dec.	48.40	48.40	53.65	54.40	56.90	58.40
Average	44.42	48.40	49.34	54.40	55.48	57.65
	1954	1955	1956	1957	1958	1959
Jan.	\$58.40	\$58.40	\$80.90	\$64.90	\$68.40	\$68.40
Feb.	58.40	58.40	60.90	64.90	68.40	68.40
Mar.	58.40	58.40	60.90	66.90	68.40	68.40
Apr	58.40	58.40	62.40	66.90	68.40	68.40
May	58,40	58.40	62.40	66.90	68.40	68.40
June	58.40	58.40	62.40	66.90	68.40	68.40
July	58.40	80.27	62.40	68.40	68.40	68.40
Aug.	58.40	60.90	64.90	68.40	68.40	68.40
Sept.	58.40	60.90	64.90	68.40	68.40	68.40
Oct	58.40	60.90	64.90	68.40	68.40	68.40
Nov	58.40	60.90	64.90	68.40	68.40	68.40
Dec	58.40	60.90	64.90	68.40	68.40	68.40
Average	58.40	59.59	63.07	67.32	68.40	68.40

Per Gros	s Ton,	Mah	oning,	Sher	nango	Valley	
	1947	1948	1950	1951	1952	1953	
Jan	\$30.50	\$39.50	\$46.50	\$52.50	\$52,50	\$55.00	
Feb	30.50	39.50	46,50	52.50	52.50	55.00	
Mar	33.50	39.50	46.50	52.50	52.50	55.00	
Apr	33.50	39.50	46.50	52.50	52.50	55.00	
May	33.50	39.50	46.50	52.50	52,50	55.00	
June		39.50	46.50	52.50	52.50	55.00	
July	34.70	42.50	46.50	52.50	53.00	56.50	
Aug		43.50	46.50	52.50	55.00	56.50	
Sept	36.50	43.50	47.50	52.50	55.00	56.50	
Oct	36.50	46.12	49.50	52.50	55.00	56.50	
Nov	38.50	48.50	49.50	52.50	55.00	56.50	
Det		46.50	52.50	52.50	55.00	56.52	
Average	34.36	42.13	47.58	52.50	53.75	55.75	

[†] Price unchanged at \$46.50 through 1949.

BUFFALO FOUNDRY PIG IRON

	1948	1949	1950	1951	1952	1953
	\$40.37	\$47.28	\$46.50	\$52.50	\$52.50	\$55.00
eb	42.12	47.00	46.50	52.50	52.50	55.00
vlar.	42.45	47.00	46.50	52.50	52.50	55.00
\pr	41.49	46.75	46.50	52.50	52.50	55.00
Иау	41.37	46.50	46.50	52.50	52.50	55.00
lune	41.44	46.50	46.50	52.50	52.50	55.00
luly	42.08	48.50	46.50	52.50	53.00	56.50
lug	44.90	46.50	46.50	52.50	55.00	56.50
Sept	45.87	46.50	47.25	52.50	55.00	56.50
Oct	47.12	46.50	49.50	52.50	55.00	58.50
Nov	47.50	46.50	49.50	52.50	55.00	56.56
Dec	47.50	46.50	52.50	52.50	55.00	56.50
Average	43.65	46.67	47.56	52.50	53.75	55.7
	1954	1955	1956	1957	1958	1956
Jan	\$56.50	\$56.50	\$59.00	\$63.00	\$66.50	\$66.50
Feb	56.50	56.50	59.00	63.00	66.50	66.50
Mar	56.50	56.50	59.00	65.00	66.50	66.5
Apr	56.50	56.50	60.50	65.00	66.50	66.5
May	56.50	56.50	60.50	65.00	86.50	66.5
June	56.50	56.50	60.50	65.00	86.50	66.5
July	56.50	58.37	60.50	66.50	66.50	66.5
Aug	56.50	59.00	62.00	66.50	66.50	66.5
Sept	56.50	59.00	63.00	66.50	66.50	66.5
Oct	56.50	59.00	63.00	66.50	66.50	66.5
Nov	56.50	59.00	63.00	66.50	66.50	66.5
Dec	56.50	59.00	63.00	66.50	68.50	66.5
Average	56.50	57.69	61.08	65.42	66.50	66.5

BIRMINGHAM PIG IRON PRICES

Foundry	Grade	, Per	Gross	Ton		
	1948	1949	1950	1951	1952	195
Jan		\$43.38	\$39.38	\$48.88	\$48.88	\$51.3
Feb.		43.38	42.38	48.88	48.88	51.3
Mar.		43.38	42.38	48.88	48.88	51.3
Apr		43.38	42.38	48.88	48.88	51.3
May	38.38	39.71	42.38	48.88	48.88	51.3
June	39.38	39.38	42.38	48.88	48.88	51.3
July		39.38	42.38	48.88	49.38	52.8
Aug	43.38	39.38	42.38	48.88	51.38	52.8
Sept	43.38	39.38	42.67	48.88	51.38	52.8
Oct	43.38	39.38	45.88	48.88	51.38	52.8
Nov	43.38	39.38	45.88	45.88	51.38	52.8
Dec	43.38	39.38	48.88	48.88	51.38	52.8
Average	40.43	40.74	43.53	48.88	49.96	52.1
	1954	1955	1956	1957	1958	195
Jan		\$52.88	\$55.00	\$59.00	\$62.50	\$62.5
Feb	52.88	52.88	55.00	59.00	62.50	62.5
Mar	52.88	52.88	55.00	59.00	62.50	62.5
Apr	52.88	52.88	55.00	59.00	62.50	62.5
May	52.88	52.88	55.00	59.00	62.50	62.5
June	52.88	52.88	55.00	59.00	62.50	62.5
July	52.88	54.47	57.67	62.50	62.50	62.5
Aug	52.88	55.00	58.65	62.50	62.50	62.5
Sept.	52.88	55.00	59.00	62.50	62.50	62.5
Oct	52.88	55.00	59.00	62.50	62.50	62.5
Nov	52.88	55.00	59.00	62.50	62.50	62.5
Dec	52.88	55.00	59.00	82.50	62.50	62.5
Average	52.88	53.89	56.86	60.75	62.50	62.

Mahoning	She	nango	Valle	y, Gro	ss To	n
	1947	19481	1950	1951	1952	1953
Feb	30.00 30.00	\$38.87 39.00	\$46.00 48.00	\$52.00 52.00	\$52.00 52.00	\$54.50 54.50
Mar	33.00	39.00	46.00	52.00	52.00	54.50
Apr May June	33.00 33.00	39.00 39.00	48.00 46.00	52.00 52.00	52.00 52.00	54.50 54.50
July	34.20 36.00	42.00 43.00	46.00 46.00	52.00 52.00	52.50 54.50	56.00 56.00
Sept	36.00	43.00 45.62	46.75	52.00 52.00	54.50 54.50	56.00
Oct	36.00 36.20	46.00 46.00	49.00 51.82	52.00 52.00	54.50 54.58	56.00 56.00
Average	34.78	41.62	47.03	52.00	53.06	55.25
	1954	1955	1956	1957	1958	1959
Feb	56.00 56.00	\$56.00 56.00	\$58.50 58.50	\$62.50 62.50	\$66.00 66.00	\$66.00 66.00
Mar	56.00 56.00	56.00 56.00	58.50 60.00 60.00	64.50 64.50	66.00 66.00	66.00 66.00
May June	56.00 56.00	56.00 56.00	60.00	64.50	66.00	66.00
July	58.00	57.87	60.00		66.00	86.00
Aug. Sept.	56.00 56.00	58.50 58.50	62.50	66.00	66.00	66.00
Oct.	56.00	58.50	62.50	66.00	66.00	66.00
Nov	56.00	58.50	62.50	66.00	66.00	66.00
Dec	56.00	57.19	60.67		66.00	66.00

BASIC PIG IRON, VALLEY

† Price unchanged at \$46.00 through 1949.



	1954	1955	1956	1957	1958	1959
Jan	\$56.50	\$56,50	\$59.00	\$63.00	\$86,50	\$88.50
Feb	56.50	56.50	59.00	63.00	66,50	66.50
Mar		56.50	59.00	65.00	66.50	66.50
Apr		56.50	60.50	65.00	66.50	66.50
May	56.50	56.50	60.50	65.00	66.50	66.50
June	56.50	56.50	60.50	65.00	66.50	66.50
July	56.50	56.87	60.50	67.00	66,50	86.50
Aug	56.50	59.00	63.00	67.00	66.50	66,50
Sept	56.50	59.00	63.00	67.00	66.50	66.50
Oct		59.00	63.00	67.00	66.50	66.50
Nov	56.50	59.00	63.00	67.00	66.50	66.50
Dec	56.50	59.00	63.00	67.00	66.50	66.50
Average	56.50	57.57	61.17	65.67	66.50	86.50



Prices: Lake Superior ore, foundry and furnace coke . . . Iron ore analyses, ore shipments and prices for various grades.

LAKE SUPERIOR IRON ORE

Avge. Analyses, Combined Ranges, Grades

		An	alyses, P	ct	
Year	Iron, Natural	Phos.	Silica	Mang.	Mois- ture
1958	53.78	0.086	8.67	0.53	8.49
1957	52.14	0.089	9.39	0.65	9.83
1956	51.34	0.090	9.78	0.67	10.39
1955	50.63	0.098	10.11	0.72	10.81
1954	50.86	0.095	10.22	0.70	10.47
1953	50.37	0.090	10.25	0.75	10.90
1952	50.49	0.111	10.05	0.77	10.78
1951	50.25	0.000	9.87	0.77	11.22
1950	50.38	0.092	9.85	0.77	11.11
1949	50.39	0.096	9.72	0.78	11.12
1948	50.49	0.093	9.30	0.76	11.35
1947	50.91	0.093	9.09	0.75	11.28
1946	51.32	0.087	8.83	0.74	11.22
1945	51.69	0.089	8.52	0.72	10.96
1944	51.72	0.688	8.42	0.74	11.02
1943	51.58	0.091	8.32	0.82	11.06
1942	51.65	0.009	8.21	0.79	10.98

Source: American Iron Ore Assn.

LAKE SHIPMENTS OF IRON ORE

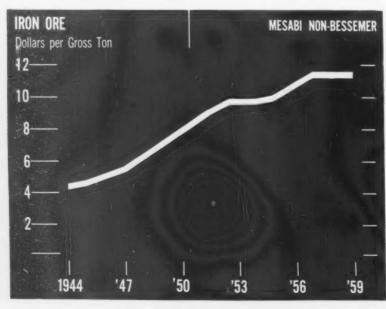
Lake Superior Shipments, Gross Tons

1941	79.941.000
1942	92,070,000
	85.116.000
1944	81,039,000
1945	75,207,000
1946	58,975,000
1947.	77,210,278
1948	82,655,757
	69,556,269
1949	
1950	78,205,592
1951	89,092,012
1952	74,910,798
1953	95.844.449
1964	60.793.697
	87,459,853
4000	73.389.972
1075	
1957	84,615,871
1958	52,243,820
1959*	44,500,000

* Estimate. Source: American Iron Ore Assn.

LAKE SUPERIOR IRON ORE PRICES Per Gross Ton at Lower Lake Ports

BESSEMER ORES	Guar	rantee	P	rice	NON-BESSEMER	Guar-		Price	
	fron Natural	Phos- phorus Dry	Old Range	Mesabi		Iron Natural	Old Range	Mesabi	High Phos- phorus
1945 to June 24, 1946		0.045	4.95	4.70	1945 to June 24, 1946	51.50	4.80	4.55	4.55
1946 - June 24 to Dec. 31		0.045	5.45	5.20	1946-June 24 to Dec. 31	51.50	5.30	5.05	5.05
1947 to Apr. 1, 1948		0.045	59.5	5.70	1947 to Apr. 1, 1948	51.50	5.80	5.55	5.55
1948-Apr. 1 on	51.50	0.045	6.60	6.35	1948-Apr. 1 on	51.50	6.45	6.20	6.20
1949		0.045	7.60	7.35	1949	51.50	7.45	7.20	7.20
1950-Feb. 1 to Dec. 1		0.045	8.10	7.85	1950-Feb. 1 to Dec. 1	51.50	7.95	7.70	7.70
1950 Dec. 1 on	51.50	0.045	8.70	8.45	1950-Dec. 1 on	51.50	8,55	8.30	8.30
1951	51.50	0.045	8.70	8.45	1951	51.50	8.55	8.30	8.30
1952 to July 25		0.045	8.70	8.45	1952 to July 25	51.50	8.55	8.30	8.30
1952-July 26 on	51.50	0.045	9.45	9.20	1952-July 26 on	51.50	9.30	9.05	9.05
1953 to June 30	51.50	0.045	10.10	9.85	1953 to June 30	51.50	9.95	9.70	9.70
1953-July 1 on	51.50	0.045	10.30	10.05	1953-July 1 on	51.50	10.15	9.90	9.90
1954		0.045	10.30	10.05	1954		10.15	9.90	9.90
1955	51.50	0.045	10.40	10.25	1955		10.25	10.10	10.00
1956		0.045	11.25	11.00	1956	51.50	11.10	10.85	10.85
1957	51.50	0.045	11.85	11.60	1957		11.70	11.45	11.45
1958		0.045	11.85	11.60	1958		11.70	11.45	11.45
1959	51.50	0.045	11.85	11.60	1959	51.50	11.70	11.45	11.45



U. S. IRON ORE CONSUMPTION

In Long Tons	
1949	91,123,220
1950	106,610,273
1951	114,837,112
1952	100,640,636
1953	122, 124, 661
1954	96,800,000
1965	114,989,933
1956	119,669,641
1957	124,941,763
1958	91,899,541
1950°	*90 200 000

Estimate by The Iron Age.
 Source: U. S. Bureau of Mines.

CONNELLSVILLE FOUNDRY COKE

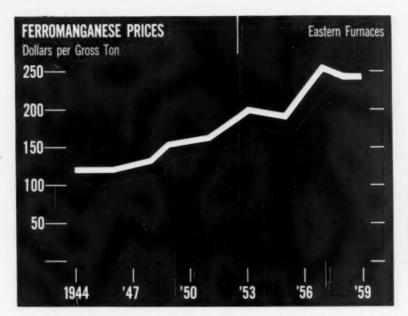
Net Ton at Oven, Monthly Review

	1948	1949	1950	1951	1952	1953
Jan.	\$14.00	\$16.94	\$15.75	\$17,25	\$17.75	\$17.75
Feb.	14.00	16.75	15.75	17.25	17.75	17.75
Mar.	14.00	16.50	16.25	17.50	17.75	17.63
Apr	14.00	18.50	15.25	17.75	17.75	17.25
May	14.00	16.38	16.25	17.75	17.75	17.25
June	16.00	16.25	16.25	17.75	17.75	17.25
July	16.50	16.13	16.25	17.75	17,75	17.25
Aug		15.75	16.25	17.75	17.75	17.25
Sept		15.75	16.25	17.75	17.75	16.95
Oct.	17.00	15.75	16.75	17.75	17.75	16.75
Nov	17.00	15.75	16.75	17.75	17.75	16.75
Dec	17.00	15.75	17.12	17.75	17.75	16.75
Average	15.62	16.18	16.32	17.65	17.75	17.22
	1954	1965	1956	1957	1958	1959
Jan.	\$16.75	\$16.75	\$16.25	\$18.25	\$18.25	\$18.25
Feb	16.75	16.75	16.25	18.25	18.25	18.25
Mar.	16.75	16.75	16.25	18.25	18.25	18.25
Apr	16.75	16.75	17.50	18.25	18.25	18.25
May	16.75	16.35	17.50	18.25	18.25	18.25
June	16.75	16.25	17.50	18.25	18.25	18.25
July		16.25	17.50	18.25	18.25	18.25
Aug	16.75	16.25	17.50	18.25	18.25	18.25
Sept	16.75	16.25	17.50	18.25	18.25	18.25
Oct	16.75	16.25	17.50	18.25	18.25	18.25
Nov		16.25	18.25	18.25	18.25	18.25
Dec	16.75	16.25	18.25	18.25	18.25	18.25
Average	16.75	16.42	17.31	18.25	18.25	18.25

CONNELLSVILLE FURNACE COKE

Net Ton at Oven, Monthly Review
1948 1949 1950 1951 1952 1953

Jan.	\$12.50	\$16.56	\$14.00	\$14.25	\$14.75	\$14.75
Feb.	12.50	15.25	14.00	14.25	14.75	14.75
Mar	12.50	14.50	14.13	14.50	34.75	14.75
Apr.	12.50	14.50	14.25	14.75	14.75	14.75
May	12.50	14.38	14.25	14.75	14.75	14.75
June	12.70	14.25	14.25	14.75	14.75	14.75
July	13.68	14.25	14.25	14.75	14.75	14.75
Aug	14.75	14.25	14.25	14.75	14.75	14.75
Sept.	15.00	14.25	14.25	14.75	14.75	14.53
Oct	15.00	14.25	14.25	14.75	14.75	14.38
Nov		14.20	14.25	14.75	14.75	14.38
Dec	15.00	14.00	14.25	14.75	14.75	14.38
Average	13.63	14.58	14.20	14.65	14.75	14.64
	1954	1955	1956	1957	1958	1959
Jan		\$14.38	\$14,25	\$15.38	\$15.38	\$14.50
Feb.		14.38	14.25	15.38	15.38	15.00
Mar		14.38	14.25	15.38	15.38	15.00
Apr		13.34	14.50	15.38	15,38	15.00
May		13.15	14.50	15.38	15.38	15.00
June	14.38	13.25	14.50	15.38	15.38	15.00
July				15.38	15.38	
Аид				15.38	14.50	
Sept.				15.38	14.50	
Oct				15.38		
Nev	. 14.38			15.38		
Dec	. 14.38	14.25	15.50	15.38	14.50	
Averag	0 14.38	13.69	14.62	15.38	15.01	14.9



PERROMANGANESE

Eastern Producers, Carloads, Cents Per Lb

	1942**	1947**	19481	1949	1950	1951	1952	1953;	1954;	1955	1956	1957	1958	1959
Jan.	5.36	6.03	6.47	7.21	7.74	8.27	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Feb.	5.36	6.03	8.47	7.21	7.74	8.31	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Mar.	5.36	6.03	6.47	7.56	7.74	8.31	8.31	10.10	10.00	9.50	10.25	12.75	12.25	12.25
Apr	5.36	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.65	12.75	12.25	12.25
May	6.03	6.03	6,47	7.74	7.74	8.31	8.31	10.12	10.00	9.50	10.75	12.85	12.25	12.25
June	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75	12.75	12.25	12.25
July	8.83	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75	12.75	12.25	12.25
Aug	6.03	6.03	6.47	7.74	7.74	8.31	9.65	10.00	10.00	9.50	10.75	12.75	12.25	12.25
Sept	6.03	6.03	6.47	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.25	12.50	12.25	12.25
Oct.	6.03	6.47	7.23	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.75	12.25	12.25	12.25
Nev		8.47	7.23	7.74	7.97	8.31	10.00	10.00	9.50	9.50	11.75	12.25	12.25	12.25
Dec	6.03	6.47	7.23	7.74	8.09	8.31	10.00	10.00	9.50	10.25	12.00	12.25	12.25	12.25
Average	5.80	6.14	6.96	7.64	7.79	8.31	9.02	10.04	9.83	10.91	10.94	12.60	12.25	12.25

† Seaboard price prior to Oct. 7, 1948. . Starting June, 1953, prices reflect new standard of 74 to 76 pct Mn. Prices grief to that converted from older gross ton pricing method and were based on standard of 78-82 pct Mn. ** Price unchanged at 6.03-from 1943 through 1945.

50 PCT FERROSILICON

Cents per lb contained Si, Carloads,

	1954	1955	1956	1957	1958	1959
Jan	12.40	12.00	12.75	13.90	14.20	14.60
Feb.	12.40	12.00	12.75	13.90	14.20	14.60
Mar	12.40	12.00	12.75	13.00	14.20	14.60
Apr	10.80	11.00	12.75	13.00	14.20	14.60
May	10.80	11.00	12.75	13.00	14.20	14.60
June	10.80	11.00	12.75	13.00	14.20	14.60
July	10.80	11.00	12.75	13.00	14.20	14.60
Aug	10.80	11.00	12.75	13.00	14.20	14.60
Sept	11.52	11.00	13.15	13.00	14.20	14.60
Oct	12.00	11.75	13.50	13.00	14.80	14.60
Nov	12.00	11.75	13.50	13.00	14.60	14.60
Dec	12.00	11.75	13.90	13.00	14.60	14.60
Average	11.56	11.43	12.00	13.15	14.30	14.60

* F.o.b. shipping point after Oct. 1, 1955.

CHEM. BONDED CHROME BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1953	1954	1955	1956	1957	1958	1959
Jan	\$86.00	\$86.00	\$86.00	\$91.00	\$98.00	\$105.00	\$109.00
Feb	88.00	86.00	86.00	91,00	98.00	105.00	109.00
Mar		86.00	86.00	91.00	98.00	105.00	109.00
Apr		86.00	86.00	91.00	105.00	105.00	109.00
May		86.00	86.00	91.00	105.00	105.00	109.00
June		86.00	86.00	91.00	105.00	105.00	109.00
July	86.00	86.00	86.00				109.00
Aug	86.00	86.00	86.00	98.00	105.00	105.00	109.00
Sept	86.00	88.00	86.00	98.00	105.00	105.00	109.00
Oct.	86.00	86.00	86.00	98.00	105.00	109.00	109.00
Nov.	86.00	86.00	91.00	98.00	105.00	109.00	109.00
Dec	86.00	86.00	91.00	98.00	105.00	109.00	109.00
Average	86.00	86.00	86.83	93.92	103.25	106.00	109.00

BONDED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

			0, 00		P-0		**
	1953	1954	1955	1956	1957	1958	1959
Jan.	\$97.50	\$97.50	\$97.50	102.00	\$109.00	\$116.00	\$119.00
Feb.	97.50	97.50	97.50	102.00	109.00	116.00	119.00
Mar.	97.50	97.50	97.50	102.00	109.00	116.00	119.00
Apr.	97.50	97.50	97.50	102.00	116.00	116.00	119.00
May	97.50	97.50	97.50	102.00	116.00	116.00	119.00
June	97.50		97.50			116.00	
July	97.50	97.50	97.50	102.00	116.00	116.00	119.00
Aug.	97.50	97.50					
Seat.							119.00
Oct.			97.50			119.00	
Nov.	97.50	97.50	102.00			119.00	
Dec.	97.50	97.50	102.00	109.00	116.00	119.00	
Avg	. 97.50	97.50	98.59	104.92	114.25	116.75	119.00

SILICA BRICK STANDARD GRADE

Mt. Union, Pa., Ensley, Ala., Carloads per 1000 Brick, F.o.b. plant

	1954	1955	1956	1957	1958	1959
Jan	\$115.00	\$120.00	\$128.00	\$140.00	\$150.00	\$158.00
Feb	115.00	120.00	128.00	140.00	150.00	158.00
Mar	115.00	120.00	128.00	140.00	150.00	158.00
Apr	115.00	120.00	128.00	150.00	150.00	158.00
May	115.00	120.00	128.00	150.00	150.00	158.00
June	115.00	120.00	128.00	150.00	150.00	158.00
July	115.00	124.00	128.00	150.00	150.00	158.00
Aug	115.00	128.00	140.00	150.00	150.00	158.00
Sept	119.00	128.00	140.00	150.00	150.00	158.00
Oct	120.00	128.00	140.00	150.00	158.00	158.00
Nov	120.00	128.00	140.00	150.00	158.00	158.00
Dec	120.00	128.00	140.00	150.00	158.00	158.00
Average	116.58	123.66	133.00	147.50	152.00	158.00

Ferroalloys, Furnace Bricks



SPIEGELEISEN, 19 TO 21 PCT.

Palmerton, Pa., Carloads, Gross Ton

	it is made						
	1954	1955	1956	1957	1958	1959	
Jan	\$86.00	\$86.00	\$91.50	\$102.50	\$102.50		
Feb		86.00	91.50	102.50	102.50	102.50	
Mar		86.00	91.50	102.50	102.50	102.50	
Apr.	86.00	86.00	94.00	102.50	, j2.50	102.50	
May.	86.00	86.00	94.00	102.50	102.50	102.50	
June		86.00	94.00	102.50	102.50	102.50	
July	86.00	86.00	94.00	102.50	102.50	102.50	
Aug.		86.00	96.00	102.50	102.50	102.50	
Segt.		86,00	96.00	102.50	102.50	102.50	
Oct.	86.00	87.50	99.50	102.50	102.50	102.50	
Nov.	86.00	88.00	99.50	102.50	102.50	102.50	
Dec.		88.00	99.50	102.50	102.50	102.50	
Average		86.45	95.08	102.50	102.50	102.50	

BURNED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

1.0.0.	Dui	1111101	4' 00	211-01-2	Pa: 14	101	**	
198	53	1954	1955	1956	1957	1958	1959	
Jan.\$109.	00 \$	109.00	\$109.00	\$114.00	\$121.00	\$131.00	\$140.00	
Feb. 109.	00	109.00	109.00	114.00	121.00	131.00	140.00	
Mar.109.	00	109.00	109.00	114.00	121.00	131.00	140.00	
Apr. 109.	00	109.00	109.00	114.00	131.00	131.00	140.00	
May 109.	00	109.00	109.00	114.00	131.00	131.00	140.00	
June 109.	00	109.00	109.00	114.00	131.00	131.00	140.00	
July 109.	00	109.00	109.00	114.00	131.00	131.00	140.00	
Aug. 109.		109.00	109.00	121.00	131.00	131.00	140.00	
Sept. 109.		109.00	109.00	121.00	131.00	131.00	140.00	
Oct. 109.	00	109.00	109.00	121.00	131.00	140.00	140.00	
Nov. 109.	00	109.00	114.00	121.00	131.00	140.00	140.00	
Dec. 109.	.00	109.00	114.00	121.00	131.00	140.00	140.00	

HEAVY DUTY FIRE CLAY BRICK

Avg. 109.00 109.00 109.83 116.92 128.50 133.25 140.00

Pa.,* Ky., Mo., Ill., Md., Ohio, F.o.b. Plant**

1953 1954 1955 1956 1957 1956 1959
Jan. 598.30 5109.00 5114.00 5122.00 5128.00 5125.00 5126.00

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* Add \$5.00 for Salina, Pa., after May, 1949. ** Carloads per 1000 brick.

Steel Scrap



CHICAGO

Prices of No. I Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1959
Jan	\$28.13	\$34.50	\$50.10	\$57.90	\$31.75	\$43.00
Feb	25.50	34.00	46.63	49.00	37.90	44.25
Mar	24.50	34.90	48.00	44.00	35.25	40.10
Apr	28.13	35.50	54.00	39.50	28.70	33.50
May	30.38	32.90	50.50	42.00	31.75	32.00
June	31.40	33.25	44.00	51.10	35.10	34.50
July	28.88	38.00	44.50	51.75	39.25	35.50
Aug		40.90	55.50	52.63	44.00	36.75
Sept	30.00	41.75	59.00	46.50	44.90	39.70
Oct	33.75	43.25	56.90	36.50	42.50	43.25
Nov	33.30	43.70	62.50	31.75	42.75	44.00
Dec	33.00	49.13	65.00	30.50	33.70	40.30
Average	29.71	38.48	53.05	44.43	37.22	38.90

No. 2 Bundles

	1304	1900	1800	1891	1998	1958
Jan	\$21.75	\$24.50	\$40.13	\$44,40	\$22.25	\$31.25
Feb	19.75	24.50	37.75	39.75	28.25	31.50
Mar	17.88	24.50	37.30	37.50	26.00	28.90
Apr	19.40	24.50	41.50	34.00	21.70	21.75
May	22.25	23.13	36.80	34.80	24.25	21.75
June	21.88	23.60	32.75	42.13	27.50	24.50
July	20.38	27.13	34.00	41.50	29.25	24.50
Aug.	21.75	31.50	43.10	40.80	32.00	25.75
Sept.	21.75	31.90	44.75	33.88	31.50	27.10
Oct.		33.38	42.25	23.70	29.50	30.00
Nov	23.56	34.19	46.00	20.25	31.50	30.50
Dec	23.50	39.95	50.25	19.50	31.50	26.50
Average	21.52	28.56	40.55	34.35	27.93	27.00

PHILADELPHIA

Prices of No. I Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1959	
Jan	\$27.63	\$32.87	\$54.10	\$59.50	\$37.13	\$35.75	
Feb	25.00	37.00	50.63	57.00	38.00	39.50	
Mar	22.10	38.40	50.40	52.75	38.00	37.30	
Apr		37.00	54.63	48.88	36.40	33.75	
May		35.60	53.30	50.25	34.00	34.00	
June	22.75	38.50	46.75	56.10	33.60	36.70	
July	23.25	40.50	48.25	54.00	34.75	39.00	
Aug		45.50	55.80	51.25	37.75	39.50	
Sept	28.13	45.70	58.38	46.38	39.90	41.10	
Oct	30.75	48.50	56.80	37.70	40.50	44.75	
Nov		47.10	59.25	33.75	37.62	46.00	
Dec	31.38	51.00	62.50	34.00	43.50	42.70	
Average	26.16	41.31	54.23	48.30	37.60	39.17	

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan	\$22,75	\$26.00	\$45.50	\$49.40	\$26.50	\$24.38
Feb		28.50	41.63	47.63	27.50	26.00
Mar	17.25	30,80	40.10	42.25	27.50	24.80
Apr		28,50	44.13	36.00	25,30	21.75
May		27.13	42.30	39.50	23.50	21.50
June		27.50	36.00	48.13	23.50	23.50
July	17.75	31.75	37.25	46.38	23.50	26.75
Aug		36.50	44.50	43.00	24.00	27.25
Sept		38.50	47.25	37.50	24.50	27.20
Oct		37.50	45.63	28.50	25.25	29.00
Nov	27.75	37.25	49.10	24.75	23.25	30.00
Dec		42.50	52.13	24.60	23.10	26.90
Average	21.11	32.70	43.79	38.97	24.78	25.75

Average of Iron Age Scrap Prices Pittsburgh, Chicage, Philadelphia Per Gross Ton

No. I Heavy Melting

	1954	1925	1936	1957	1958	1959
Jan	\$28.67	\$34.62	\$52,33	\$59.37	\$33.88	\$41.08
Feb	25.92	36.16	48.75	53.17	37.17	43.66
Mar	23.83	37.27	49.43	48.50	36.58	40.43
Apr	25.38	36.50	54.88	42.80	32.73	35.08
May	27.79	34.48	51.17	46.17	33.50	34.41
June		34.96	45.08	54.23	35.40	37.90
July	26.87	39.50	46.42	54.00	38.25	39.33
Aug		43.96	56.10	52.96	42.08	39.91
Sept	29.71	44.25	58.58	47.29	43.30	41.70
Oct		44.78	56.80	37.37	42.67	44.83
Nov		45.47	61.67	32.83	41.70	45.67
Dec		50.42	64.59	32.33	39.90	41.90
Average	28.59	40.19	53.82	46.75	38.09	40.49

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan	\$23.25	\$26.33	\$43,29	\$47,43	\$25.83	\$29.21
Feb	20.67	27,46	40.13	44.04	28.75	30.33
Mar	18.38	28.83	40.03	39.58	27.50	28.27
Apr	19.73	27.17	43.88	34.75	24.03	23.33
May		25.87	39.73	38.07	24.67	23.33
June	21.63	26.07	35.08	45.84	26.17	25.50
July	20.54	30.46	36.42	44.88	27.58	26,92
Aug		35.17	44.40	43.17	29.67	27.50
Sept	22.42	35.77	48.50	37.13	29.10	28.20
Oct	25.79	36.13	44.88	27.80	28.75	30.50
Nov	26.27	35.73	48.33	24.66	29.33	31.33
Dec	25.07	41.32	51.63	24.20	28.70	28.23
Average	22.27	31.34	42.86	37.63	27.53	27.72

PITTSBURGH

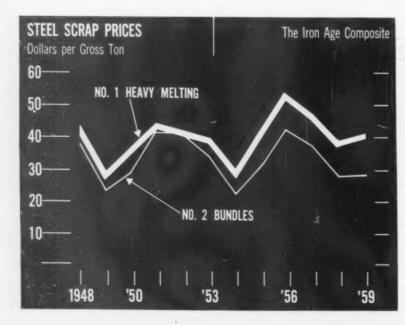
Prices of No. I Scrap, Per Gross Ton

	1954	1955	1956	1957	1958	1950
Jan	\$30.25	\$36.50	\$52.50	\$60.70	\$32.75	\$44.50
Feb	27.25	37.50	49.00	53.50	36.50	47.25
Mar	24.90	38.50	49.90	48.75	36.50	43.90
Apr	26.50	37.00	56.00	42.00	33.10	38.00
May	30.25	34.70	49.70	46.25	34.75	37.25
June	29.50	35.25	44.50	55.50	37.50	42.50
July	28.50	40.00	46.50	56.25	40.75	43.50
Aug	29.50	45.00	57.00	55.00	44.50	43.50
Sept.	31.00	44.50	58.38	49.00	44.50	44.30
Oct	34.00	44.50	56.70	37.90	45.90	46.50
Nov	34.20	45.80	63.25	33.00	44.75	47.00
Dec	33.00	51.13	66.25	32.50	42.50	42.70
Average	29.90	40.87	54.14	47.53	39.42	43.40
Sept. Oct Nov Dec	31.00 34.00 34.20 33.00	44.50 44.50 45.80 51.13	58.38 56.70 63.25 66.25	49.00 37.90 33.00 32.50	44.50 45.90 44.75 42.50	44.30 46.50 47.00 42.70

No. 2 Bundles

	1954	1955	1956	1957	1958	1959
Jan	\$25.25	\$28.50	\$44.25	\$48.50	\$28.75	\$32.00
Feb.		29.38	41.00	44.75	30.50	33.50
Mar	20.00	31.20	42.70	39.00	29.00	31.10
Apr		28.50	46.00	34.25	25.10	26.50
May	26.00	26.75	40.10	39.90	26.25	26.75
June		27.10	36.50	47.25	27.50	28.50
July	23.50	32.50	38.00	46.75	30.00	29.50
Aug		37.50	45.60	45.70	33.00	29.50
Sept		38.90	47.50	40.00	31.30	30.30
Oct		37.50	46.75	31.30	31.50	32.50
Nov	27.50	35.75	49.90	29.00	33.25	33.50
Dec	25.90	41.50	52.50	28.50	31.50	31.30
Average	24.43	32.76	44.23	39.57	29.89	30.41

SCRAP FORECAST: During 1960, scrap dealers and brokers will ship about 32-34 million tons of scrap to domestic mills and foundries and export markets. That's the prediction of Edwin C. Barringer, executive vice president of the Institute of Scrap Iron & Steel. Domestic demand for scrap should be 6 million tons above 1959, he adds.



Contact one dependable source for non-ferrous supplies...FEDERATED.

You have the most comprehensive line of available non-ferrous materials to select from. Through the widest variety of products, the most stringent production controls, and the most experienced and extensive application assistance—Federated is *your* supply headquarters for: Non-ferrous casting metals, aluminum, copper base, zinc base; Solders, Babbitt metals; Lead products; Plating anodes and chemicals; Low melting alloys; Galvanic anodes; Type metals; Zinc dust. Federated Metals Division, 120 Broadway, New York 5. In Canada: Federated Metals Canada, Ltd., Toronto and Montreal.

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THE YEAR IN REVIEW

1959: Prosperity **Despite Labor Crisis**

Strikes set records as industry tries to halt inflation and meet foreign competition.

Khrushchev visits U. S.; Ike tours the world; compact cars off to steel-starved start.

January

• The year opened on a note of cautious optimism as industry leaders predicted "a fairly good yearbut nothing like a boom." Steel mills were operating at 75 pct of capacity (rated at 147.6 million ingot tons per year). A few of the smarter buyers were thinking of building inventory as a hedge against a possible steel strike. By month's end severe hedge buying fever had set in and steel mill scheduling departments were in a frenzy.

Machine tool builders, pushing to rebuild backlogs, reported January new orders 50 pct ahead of those of a year ago. Personal income set a new record at \$362.3 billion and the Federal Reserve Index moved up a point to 143-17 pct above the '58 low set in April. (All FRB Index references in this report are to the seasonally adjusted combined index.)

Caribbean Crisis - Fidel Castro took over in Cuba, warned the U.S. to mind its own business. Few Americans took this seriously.

Hard coal operators followed the soft coal pattern in raising wages \$1 a day, boosting vacation and welfare fund payments, raised prices as much as \$1 a ton. Eisenhower's annual Economic Report urged unions to gear wage demands to productivity. Hoffa called off his threat to organize policemen.

Soviet Smiles-Anastas Mikoyan, USSR Deputy Premier, landed in Washington on Jan. 4 to spread a little sunshine and pick up a trade deal, including a huge loan to buy machinery. He flew home with no deal on Jan. 29-leaving the impression in the minds of thousands of ingenuous Americans that the cold war was a thing of the past.

Meanwhile, back at the launching pad in Siberia, his buddies shot a rocket to the moon. It carried a 796-lb instrument package, missed the moon by only 5500 miles.

Steel scrap (The IRON AGE Composite) moved up \$2.76 a ton; lead dropped a cent to 11.80.

February

• The probability of labor trouble moved closer as both steel management and the union stepped up their advertising campaigns to win public support in what promised even then to be a real union-management crisis. Panic moved into the steel market as buyers tried unsuccessfully to build inventory.

Steel operations soared from 77 to 90 pct during the month. For the second month in a row, steel imports exceeded exports. New orders for machine tools, at \$45.4 million, set an 18-month record.

Merger Banned—Bethlehem Steel and Youngstown Sheet & Tube abandoned merger plans without appealing an adverse U. S. District Court ruling.

An IRON AGE study showed exports trending down in steel, automotive, aircraft, agricultural and industrial machinery. Only railroad equipment, office machinery and electronics were running counter to

Castro was reported ready to

1959 in Review

move against Freeport Nickel's nickel-cobalt operation.

Secretary Dulles returned after a conference on Russia's Berlin ultimatum, entered a hospital for surgery.

Prices Rise - The Commerce Dept. clamped export controls on copper, charging too much was going to Russia. Copper rose 1¢ (to 30¢) for the month. Tin moved up sharply to 103.75¢ per lb, from 99.875¢; lead lost another ½¢, closing at 11.30¢. Steelmaking scrap turned soft in mid-month, ended at \$43.17 per gross ton.

A U. S. Vanguard missile put a 21.2-lb sphere into orbit; a Titan ICBM again blew up on the launching pad. Russia's 796-lb moon shot instrument package was presumably orbiting the sun.

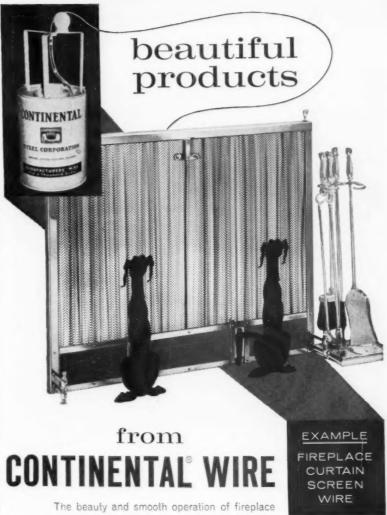
March

• With the approach of spring, business began busting out all over. Looking at unemployment of 4.4 million, Labor Secretary Mitchell predicted that it would be less than three million by the third quarter. Gross national product hit a record \$470.2 billion rate as the first quarter closed, up from \$457.1 billion at year's end. New machine tool orders were up another 13 pct. Some steel buyers began to place third quarter orders but few succeeded in building inventory; they were using it too fast. Industrial production and factory pay set new records.

National Steel said it would build a \$300 million strip mill in the Chicago area, bringing total steel industry capital spending "plans" for the year to more than \$1.3 billion.

Compact Cars-Ford broke the auto industry's worst-kept secret, being the first officially to announce its entry into the economy car field. The IRON AGE said Chevrolet's entry would be a rear-engine job, that Chrysler would be last into production.

Hawaii become the fiftieth state. to the considerable financial embarrassment of U.S. flag makers.



curtain screens depend on accurate forming,

even spacing, and neat appearance of the mesh. The wire used must be of correct temper, diameter and finish. Uniformity of these properties is of prime importance. Leading fireplace equipment makers choose Continental Wire because it possesses these features dependably, in coil after coil. The ability to take intricate forming is an important reason why Continental Wire is specified for scores and scores of other products made with wire, Continental Curtain Screen wire, 19 gauge through 20 gauge inclusive in size, is available in 500 pound to 650 pound catchweight single length coils packed in Leverpac Drums for faster weaving with less down time, cleaner handling and better storage. For wire in practically any size, finish, temper or analysis, in low or medium low carbon steels, see Continental first!

Fine Finishes in Manufacturers' Wire

CONTINENTAL STEEL

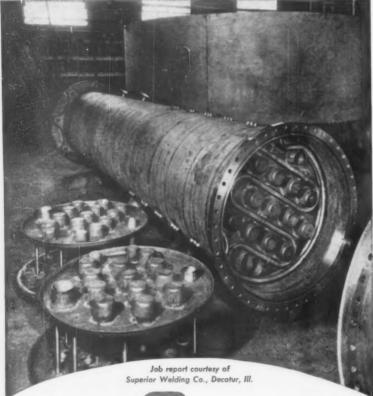
CORPORATION

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INDIANA

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright and special shaped wire. Also Welded Wire Reinforcing Fabric Nails, Continental Chain Link Fence, and other products.

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This is a nitric acid absorption column for the chemical industry. The shell and flanges of solid 304 ELC stainless were welded with Arcos CHROMEND 19-9 Cb Electrodes to resist chemical attack at 150 p.s.i.g. and 300°F. Arcos CHROMEND K-LC Electrodes were used for welding the bubble caps and coil clips. Together, these two Arcos Electrodes proved the point: there's no substitute for quality weld metal when long uninterrupted service is essential. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.



1959 in Review

Hold the Line—President Eisenhower declared that steel labor talks must not bring higher prices. That, he said, would raise the threat of controls. His anti-inflation drive was still successful; the cost of living index held at 123.7; about where it had been for a year.

A Supreme Court ruling made it legal for states to levy taxes on the total net income of out-of-state companies who sell in that state.

Missile Misses—The Air Force announced that Discoverer I was in orbit, Army's Army's Pioneer IV missed the moon by 37,000 miles to orbit about the sun.

The Scrap Composite dropped nearly \$3 for the month, closing at \$40.50, as continued sinter development weakened demand for purchased scrap. Copper was up $1\frac{1}{2} \notin$ to 31.50 and lead gained $\frac{1}{2} \notin$ to 10.80. Zinc was steady; tin dropped $1\frac{1}{2} \notin$ to 102.75 \(\epsilon\) per lb.

April

■ Unemployment continued to make headlines. In Washington the AFL-CIO rallied some 7000 members to protest lack of heavy federal spending to relieve unemployment. There, Secretary Mitchell repeated his prediction that unemployment would be less than three million by October, promised to eat his hat if proved wrong. The President's economic advisers continued to insist a business pickup was on the way, argued against "buying way out" of recession.

The IRON AGE April 2 issue carried a study of metalworking's capital appropriations showing a 35 pct upturn in appropriations. It predicted "moderate but firm improvement." Elsewhere it noted that "the year is rapidly shaping up into a pretty rough bargaining period," pointed out that the strong business comeback hampered steel inventory buildup.

Steel Strike Seen-U. S. Steel chairman Roger M. Blough and

Sen. Joseph C. O'Mahoney tangled horns over a bill the latter proposed to force industry to give advance notice of price increases. Mr. Blough's strong talk apparently failed to convince the subcommittee that labor costs were responsible for inflation. Said The IRON AGE: "The union will have to strike to get the kind of demands it is talking about publicly and privately."

The USWA rejected an industry proposal to freeze wages for one year, asked for price freeze, wage increase.

One Strike Settled—Allis Chalmers and the UAW signed a 2½-year pact ending an 11-week strike of 14,000. It provided 6¢ per hr in the fall of '59, '60 and '61; plus fringes.

The Dalai Lama escaped to India following brutal Chinese Communist suppression of the revolt in Tibet.

Secretary Dulles, suffering from cancer, resigned, Christian Herter succeeded him, left shortly for the Foreign Ministers Conference in Paris.

Scrap Slips — Scrap prices dropped \$4 during the month, sending The IRON AGE Composite down to \$33.83. Copper and lead were unchanged.

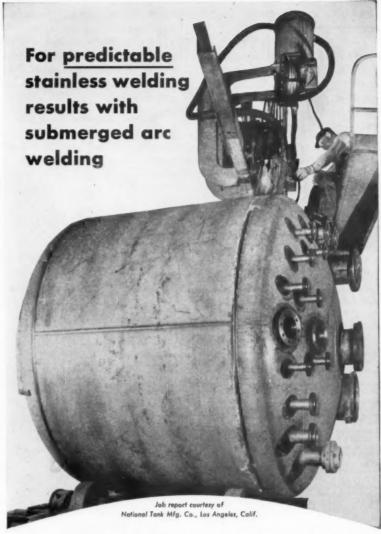
The Air Force put Discoverer II into polar orbit. Two Vanguards failed.

May

■ Steel users could not build stocks as business boomed. The FRB Index reached 153, or 11 points above the year-end figure; in durable the gain was from 152 to 169. Personal income hit a new record at \$381.3 billion. The Federal Reserve Board increased the discount rate, tightened stock trading rules.

Makers of most of the nation's heat treating furnaces and equipment toted up April orders, discovered they topped those of the first three months combined.

Nonferrous Picks Up — Aluminum operations, sparked by a little



use ARCOSITE BONDED FLUX

This 4,000-gallon tank for a resin reactor will handle highly corrosive material at temperatures of 500° to 600°F. Stainless top and bottom heads of type 316L were submerged arc welded to the body with Arcosite Flux and Arcos Chromenar Stainless Wire. This combination gives the proper weld metal chemistry for the needed corrosion resistance and an economical solution to the problem. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Penna.





1959 in Review

strike talk and good business, picked up to about 87 pct of the industry's capacity. Brass mills leveled off after a brisk pickup. Nickel's '59 sales were predicted at 20 pct ahead of '58, when 320 million lb were consumed.

Steel company - USWA negotiations opened in New York with the union demanding a "substantial" wage increase, incorporation of the 17¢ cost-of-living increases achieved under the current contract and many fringes, including spreading of work, plus more insurance, unemployment and pensions.

"Mutual Assistance"—Exclusive IRON AGE article disclosed a steel industry "mutual assistance pact" similar to one used by airlines. As negotiations dragged on it became

clear that both sides were miles apart. By month's end David Mc-Donald, USWA president, was accusing management of "absolute refusal to bargain in good faith." The IRON AGE again predicted a strike.

In Washington, industry leaders asked an end to the Renegotiation Act, saying it discourages efficiency, rewards the inefficient, piles up paperwork, and discourages bidding by many reputable companies.

New Prices — Some steel warehouses instituted a new pricing system to more accurately reflect newly acquired knowledge on the cost of processing orders. Generally it meant larger discounts for larger quantities of single items, and vice versa.

The IRON AGE heavy melting steel scrap composite firmed by \$2 a ton, closing the month at \$35.83. Zinc and copper were unchanged; lead moved up ½¢ to 11.80; tin gained 1¢ to close at 103.5.

Space Monkeys—Two monkeys soared 300 miles into space in the nose of a Jupiter IRBM, returned for the usual press conference.

June

• In retrospect—due to the steel strike—June proved to be the peak industrial activity month of the year. The FRB Index hit a record 155; machine tool orders hit \$65 million, just double the year-ago figure. Personal income peaked at \$383.8 billion, gross national product at \$484.5 billion.

The quarterly survey of metalworking's capital spending plans conducted for The IRON AGE by the National Industrial Conference Board showed appropriations doubled by most segments of metalworking, saw a boom in capital goods.

Imports Soar — But steel companies were growing acutely aware of the spectre of foreign competition, as imports continued to exceed

Continued on p. 326

ROHCO®

BETTER METAL FINISHES FOR YOUR PRODUCTS

FOR ZINC PLATING

ROHCO 503 STILL OR BARREL ZINC BRIGHT-ENER (LIQUID) — produces jewel-like bright zinc deposits; ideal where one brightener is desired for all your bright zinc baths.

ROHCO 100 AND 100 SPECIAL BARREL BRIGHT-ENERS (LIQUID OR POWDER)—the most widely used of all barrel zinc brighteners; brilliant, bluish deposits directly from the plating tank.

ROHCO 175 BARREL BRIGHTENER (POWDER) the newest addition to the ROHCO series; somewhat less brilliant deposits than with ROHCO 100 but at lower cost.

ROHCO ISO (POWDER) AND PERMA-BRITE B-ISO (LIQUID) BARREL BRIGHTENERS—the most economical barrel brighteners on the market; for maximum brightness a bright dip is required.

PERMA-BRITE S-400 STILL BRIGHTENER (LIQUID)
—somewhat less brightness than with ROHCO
503, at lower cost.

ROHCO ZW-600—wetting agent for cyanide zinc baths. Eliminates scum on the surface, lowers drag-out, and improves plating bath operation in both barrel and tank.

ROHCO ZINC-SOL — double strength, purified make-up or replenishment solution for instant

bright plating.

ROHCO ZINC PURIFIER—to keep baths in tiptop shape for unfailing quality and appearance.

RODIPS—short-dip chromate treatments supplied
as powders to brighten, passivate, and protect
zinc plate for improved corrosion resistance and
color retention. Receptive to subsequent absorption of dyes for color identification of parts.

FOR CADMIUM PLATING

ROHCO 20XL and SUPER XL (LIQUID OR POWDER)—tops for producing the clearest, brightest barrel, or still cadmium; minimizes cadmium usage by improving uniformity and speed of deposit

RODIP CD-3 and CD-4—single short-dip chromate post-plating treatment without leach for brilliant cadmium and good corrosion protection; CD-3 for automatic tank or barrel, CD-4 for manual operations

CAD-SOL—a heavy solution of cadmium cyanide for easiest bath make-up or maintenance.

FOR CHROMIUM PLATING

ROHCO ANTI-SPRAY—produces foam blanket which eliminates chrome mist, safe for hard chrome baths.

ROHCO SUPER NO-CRO-MIST® — safeguards workers' health by eliminating chrome tumes, solves ventilating and heating problems; saves chromic acid.

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ANODICATOR THICKNESS TESTER—an approved, new instrument for electrically checking thickness of anodic coatings. Completely automatic.

RODIP AL-44—additive for aluminum bright dips. Produces increased luster at lower temperature and suppresses acid fumes.

RODIP AL-50—single dip chromate treatment for aluminum and its alloys to give outstanding corrosion resistance and/or excellent bonding of paint.

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ROHCO RINS-AID $\mbox{\it R}$ —water-shedder additions to rinse cycle to improve drying and to prevent staining.

RECTIFIERS—for Hull Cell tests and/or plating operations. Complete range of capacities from 5 amperes up, with output to give 5% or less ripple. Optional automatic timers for 5 to 50 ampere units.

HULL CELLS—used world-wide for control of plating baths. Porcelain or molded polyethylene in 267 ml. capacity. Clear lucite in 267 ml. and 1,000 ml. capacities with or without heater and thermostate.

ELECTRIC HULL CELL AGITATOR—new type oscillating variable-speed to reproduce tank operation.

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1959 in Review

exports, a trend started in December 1958. For the first six months exports were 1.4 million tons; imports 2.3 million tons.

In Washington, President Eisenhower told the Society of Business Magazine editors that the nation needed a sound dollar, noted that if in a time of prosperity "we can't pay off some of the Federal debt then our financing is going to have to be done under very unsatisfactory methods . . . there will be a further cheapening of our money." The consumer price index had moved up from the February-March low of 123.7 to 124 in May. By month's end it had hit 124.5.

Some Hope Seen—As the steel labor contract expiration date of June 30 approached it appeared at times that a strike could be averted at the last minute. The steel companies asserted that the union "of-

fer" of about 15 to 16¢ per hr would cost them 20 to 22¢. They repeated their wage freeze "offer," coupled it with demands to wipe out some local practice featherbedding clauses that deprived management of the right to manage. As mills prepared to shut down, the White House won an extension in the strike deadline to July 14. Steelworkers were averaging \$3.10 per hr.

Steelmaking scrap, which had opened the month at \$37.17, moved up \$1 during June. Copper, despite some strike fears, was steady.

July

■ The Geneva Foreign Ministers Conference continued on dead center, Russia opened its exhibition in New York and Vice President Nixon flew to Moscow to open the U. S. exhibit there. Despite much talk, there was no progress in easing cold war tensions.

Steel mills, faced with strike uncertainties, and no contract, operated at 80 pct of capacity.

Eisenhower asked for an indefinite extension of the steel contract; the Steelworkers declined. Wildcat strikes marked the first few days of July. On July 15, some 500,000 workers walked out of the mills, idling about 85 pct of the nation's steelmaking capacity. U. S. employment in mid-July was 67.6 million, an all-time record.

Aluminum Pact — At month's end, the USWA agreed with Alcoa, Kaiser and Reynolds to extend aluminum pacts for 30 days beyond a steel settlement.

The Association of American Railroads conditionally okayed aluminum freight cars; though more expensive, they carry five to eight tons more cargo.

Building Blocks—Major machine tool builders agreed to standardize on dimensions of some high production tools. The accord capped four years of effort by automakers to sell the "building block" concept.

Steel stocks, at 23 to 24 million tons, including a record 3.7 million tons in warehouses, looked pretty good as the strike started. Steel scrap prices moved up \$1 for the month; copper dropped 1.5¢ to 30¢ per lb, despite lack of progress in copper labor talks.

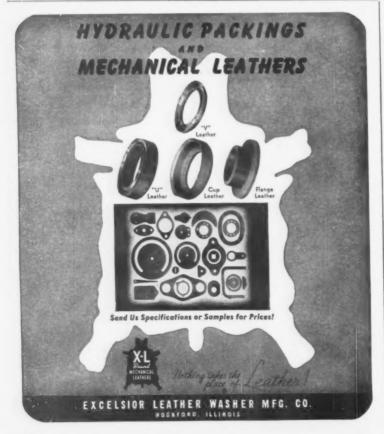
August

• Employment other than steel was only slightly affected by the steel strike, but the Federal Reserve seasonally adjusted index dropped four points to 149 for the month. Congress gave the military a \$39.2 billion budget for fiscal 1960.

Secretary Herter returned from Geneva saying that Russia's attitude made successful talks impossible. Vice President Nixon returned from Siberia saying that the Russian people want peace. Eisenhower announced he's invited Khrushchev for a visit; then flew to Paris, Bonn, London to lay the groundwork.

"Hands Off"—The President said he did not plan to intervene in the

Continued on p. 329



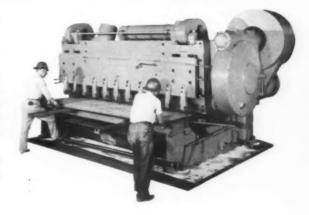


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For a wide variety of product applications, Ingersoll produces specialty steels made up of composite layers. These include Ingersoll's famous IngAclad stainless-clad steel, soft center steel, and 2-ply knife steel—all widely used in industry.

To make such sandwich-type steels properly calls for special experience and skill, special care and handling from melting to rolling to shearing and blanking. But that's typical of all the specialty steels Ingersoll makes—where fine quality is the standard at every step of the way to make sure the steel you get meets your exact specifications.

And that's the best reason of all why Ingersoll Steel is such a good name to know, a good place to go for the specialty steels you need. Try us—we think you'll agree.

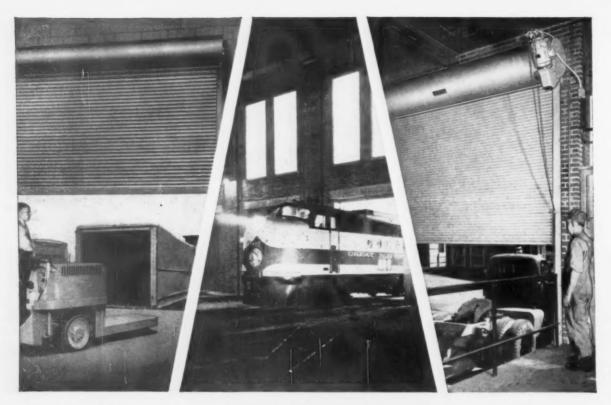




SAW STEELS - HIGH SPEED POWER AND HAND HACK SAW STEELS - KNIFE STEELS - STAINLESS STEELS - HEAT RESISTING STEELS - INGACLAD
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STEELS - FORCING QUALITY ELECTRIC FURNACE HOLOTS TO 23,000 POUNDS

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you get more efficient use of cranes, hoists, conveyors, and other handling equipment. In fact, Kinnear Rolling Doors can be equipped to open and close around crane or hoist rails that run right through the doorway.

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Doors.

Doors are built to fit any old doorway. Electrical, manual

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(Sectional-Type)
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Among the line of Kinnear Rolling Doors and Grilles described in this catalog you'll find details on the Kinnear RoL-TOP Doors — the door composed of rugged, heavily galvanized sections, hinged horizontally (available also with wood sections). For "Saving ways in Doorways", it will pay you to have this catalog on file.

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steel strike unless it became a national emergency, quietly used the full power of his office to work out a settlement.

Secretary Mitchell laid the "facts" in the steel case before the public. Both sides asserted they supported their position. Record first-half steel earnings were thrown at steelmakers, who countered with the argument that customers had bought nine months' steel in six.

Roger M. Blough promised no steel price increase if a settlement were negotiated voluntarily.

Copper Struck—A strike of the Mine, Mill and Smelter Workers hit 75 pct of the U. S. copper industry. Copper users, with 30- to 60-day inventories seemed unconcerned. It also idled half of U. S. lead processing units; lead went up 1¢ per lb to 12.80¢. Copper and zinc were unchanged; steel scrap was a trifle higher.

September

■ As the steel strike entered its seventh week, unemployment outside of basic steel began to grow; starting the month at 82,000, it passed 166,000 by Sept. 30. Though the FRB Index held steady at 149, Gross National Product for the third quarter fell nearly \$6 billion below the second quarter level, and consumer prices set a new record high. The Federal debt passed \$290 billion. Going the other way, steel stocks fell to 11 million tons, less than half the prestrike level.

Russia shot a rocket at the moon just as Premier Khrushchev was leaving for his U. S. tour. In a sense, it was more successful than he; the rocket traveled 230,000 miles and hit the moon. Mr. K did not take home the "increased trade" he sought.

Oxygen Booms — The IRON AGE disclosed that nearly 7 million tons of new oxygen steelmaking capacity had either been contracted for or put up for bids during the previous few months, saw a possibility of the process topping 30-million ton capacity by 1965.

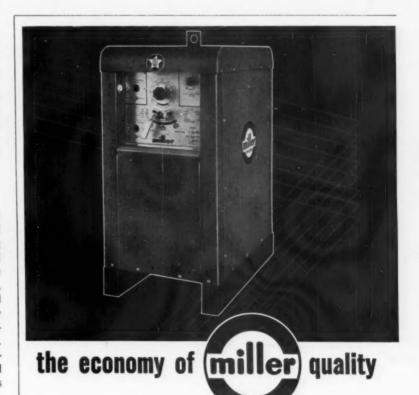
Congress put the heat on the

White House to increase restrictions on lead, zinc and fluorspar imports to aid an ailing U. S. industry.

The White House continued to put the heat on steelmakers and the union but the steel strike continued, as did that in copper.

Labor Reform At Last—After months of debate coupled with threats from various segments of labor, Congress finally passed the first real labor reform bill since the Taft-Hartley Act of 1947. Signed by the President, it hit at racketeering, secondary boycotts and a host of abuses of dishonest unionism.

Steel imports for the month rose to 366,000 tons, bringing the 9-month total to 3 million tons. This was 1.3 million tons above the full year 1958.



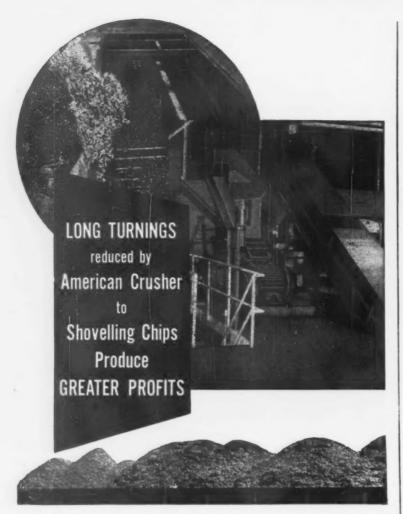
.... becomes evident after sufficient exposure to the original cost/maintenance costs/production/profits equation.

Exploiting the full potential of better basic design, the Miller Gold Star 300 series ac-dc welders convert in minutes from the prime ac-dc welder of exceptional performance to any of these three A-C applications: Metallic Arc, manual or automatic Inert Gas; or, to any of the following D-C applications: Metallic Arc, manual or automatic Inert Gas, or Inert Gas spot welding.

It's important to note that the Miller conversion kits utilized to obtain any of the above simply extend the built-in superiority of the 300 series' welding characteristics into the type of application desired. It's adaptable by design — not discovery.

Available in 200, 300, 400 and 600 ampere models, all feature the exclusive Miller transformers and semi-metallic rectifiers. Complete specifications, including duty cycle chart, will be sent promptly upon request.

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Literature on American Metal Turnings Crushers is yours for the asking.



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1959 in Review

Tool Prices Cut—Major tungsten carbide producers cut some prices sharply. The IRON AGE steel scrap composite advanced \$2 a ton to \$43.17; copper moved up as much as 1½¢, and zinc advanced 1¢ per lb.

October

• The steel strike began to pinch. Although industrial activity dipped only two points to 147, unemployment due to the steel and copper strikes soared. Before the month ended, General Motors had laid off over 185,000; General Electric's Louisville appliance division sent 3000 home and Caterpillar Tractor furloughed 12,000.

U. S. unemployment passed 3.2 million, forcing Secretary Mitchell to eat his hat or a copy thereof in cake (see April).

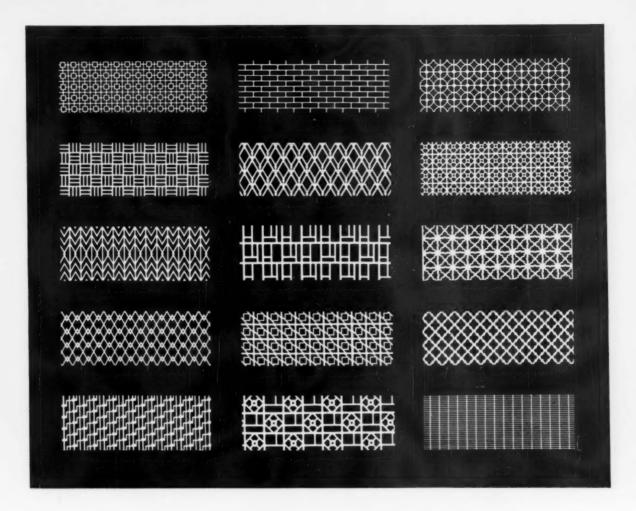
Sparked by Press Orders—Nevertheless, machine tool orders topped \$67 million for the month, highest since March 1957.

Steel strike talks broke off despite a last-ditch Eisenhower appeal. On October 9 he invoked the Taft-Hartley Act by naming a three-man fact finding board. On Oct. 17 both sides rejected each other's "final" proposals. Two days later the President ordered the Justice Dept. to seek an 80-day back-to-work injunction.

Injunction Granted — Federal Judge H. P. Sorg issued the injunction in Pittsburgh on Oct. 21 but the union appealed and won a stay. On Oct. 26 Kaiser signed with the union followed by Detroit Steel and Granite City. Kaiser estimated its cost at 20¢ per hr over a 2-year period; other steelmakers figured cost to them would be about 32¢.

Chevrolet's Corvair was the first of the smaller cars, followed by Ford's Falcon and Chrysler's Valiant.

Reds Shoot Moon—The Soviet Union fired a rocket around the moon, photographing its far side,



Why Metalworkers Work With Hendrick Perforated Metal

For well over 80 years the metalworking industry has relied on Hendrick for its perforated metal requirements. And with good reason! Hendrick perforated metal combines decorative beauty with the functional strength so often called for on new product specifications. Hendrick's vast stock of dies includes over 100 unusual patterns that are exclusive and only obtainable from the Hendrick Manufacturing Company.

Hendrick perforated plate is available in every type of commercially rolled metal in gauges and sizes of perforations to meet your exact specifications. For more information call your nearby Hendrick sales office. It's listed in your classified telephone directory under Metals, Perforated. Or -for FREE booklet, mail the coupon, today.

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1959 in Review

then transmitting the photos as it returned to pass the earth.

General Electric scientists generated electricity by passing hot gases through a cold magnetic field; Allis Chalmers showed a tractor driven electrically by reacting fuel gases in an electrolyte in "fuel cells."

Scrap Moves Up — Steelmaking scrap gained \$2.67, closing the month at \$43.50; copper was unchanged; tin dropped $1\frac{1}{2}\phi$ to 101.50; zinc moved from 12ϕ to 12.5-13 ϕ .

November

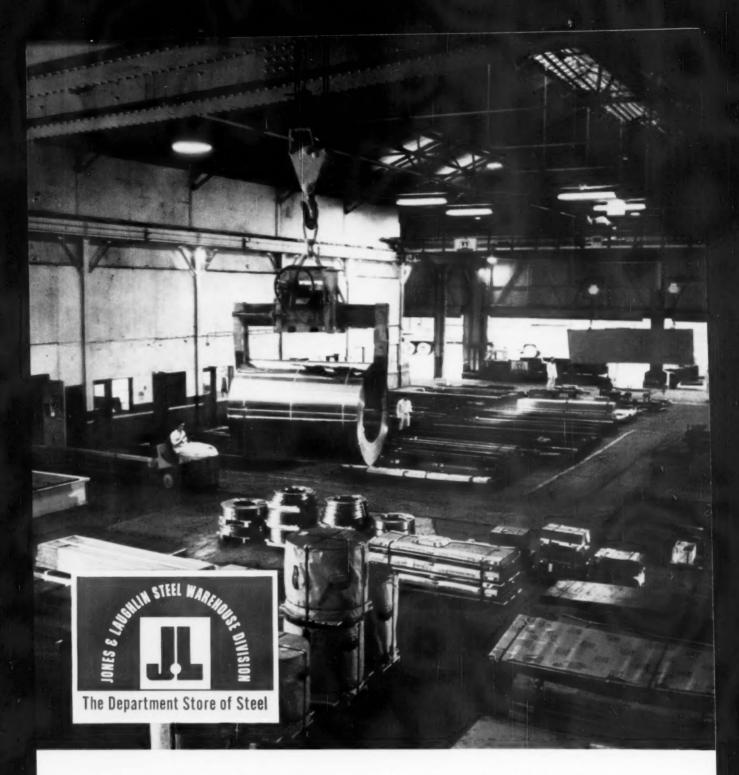
■ On Nov. 3 the U. S. Supreme Court heard arguments in the steel labor case. The USWA had appealed to the court on Oct. 30 and the latter left the Third Circuit court's stay order in effect. The Supreme Court found for the government on Nov. 7, upholding the Taft-Hartley injunction.

Quick Comeback—Workers, few grumbling, returned to the mills immediately. Within a week, steel-making operations were at the 70 pct level and by the end of the month they reached 93 pct of capacity. The comeback was the fastest in history, surprising almost everyone in the industry itself. Good advance planning was credited; worker slowdowns, predicted in some circles, were not in evidence.

But finishing facilities did not come back as fast and pipelines were dry. By the second week of the month General Motors had idled 213,000. Ford was on short weeks and Chrysler's layoffs were near 6000. Later they rose to 23,400.

Detroit Feels It—Auto production for the month fell to 254,472 cars. It was the worst peacetime production month since October 1941.

Continued on p. 335



J & L Steel Service Centers—efficient and dependable. Anywhere you look—from the order department, through every processing operation, to the well-organized shipping floor like this one—you'll find something new, something better at The Department Store of Steel. Unparalleled expansion, new buildings, the latest machinery and equipment, increased

stocks of steel, stainless and aluminum, and skilled ware-housemen trained to give *extra* care to every order—all add up to faster, more efficient service for J & L customers.

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Don't miss this opportunity to slash your maintenance costs and increase productivity. Get the facts on ELPAR's new "Acro Smooth" line today!



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1959 in Review

Kennecott Copper Co. settled its USWA strike at a cost of 22.3¢ per hr over the next 20 months. By month's end Asarco and the Mine, Mill and Smelter workers had reached agreement on the basic principles of a new contract, with local contracts remaining to be signed. Cost: 22.4¢ over 20 months.

December

■ The IRON AGE's quarterly survey showed there'd be a major advance in capital appropriations in 1960. It suggested that spending plans delayed by the steel strike would mean an even better 1960 for capital goods.

By the second week of December steel production reached 96.5 pct of capacity. The 2,732,000 tons poured set an all-time record. A week later General Motors had recalled all workers laid off for lack of steel

Both American and Continental Can signed a three-year pact with USWA. It provides 7¢ per hr plus fringes each year. It's worth 28.2¢ to 30¢ over the period, according to company and union people, respectively. Up to 3¢ hourly cost of living boost is possible in the second and third years. Can prices will rise "slightly" on Jan. 15, 1960.

Copper moved up to a straight 33¢ following Kennecott's settlement with its USWA workers. Later, Mine, Mill and Smelter Workers ended their 4-month strike.

Prices Mixed—Steelmaking scrap and lead prices eased. Aluminium Ltd. raised ingot prices ¾ ¢ in other than U. S. markets. Alcoa raised pig prices 1.3¢ per lb to 26¢, the level prevailing in August 1957. Other U. S. companies followed.

Aluminum companies signed pacts with USWA worth 28.5 to 30¢ over three years, with '59 wages boosted 4.8 to 5.5¢ and a cost-of-living clause like that of the canmakers.

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JOPAAC INDUSTRIAL GLOVES

Leading manufacturers everywhere are cutting costs and increasing worker-safety by changing to Jomac terry cloth work gloves. Jomacs are made of thick loop-pile fabric that cushions the hands, protecting them against sharp edges and rough surfaces. They are made from various weights of cloth for specific applications. Any two make a pair, since they are completely interchangeable, and they can be reconditioned time after time—will give extraordinary wear. Fill in the coupon below for more information and a free copy of the Jomac Work Glove Catalog.

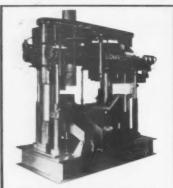
Jomac also manufactures North PVC Coated Gloves and wet weather garments.

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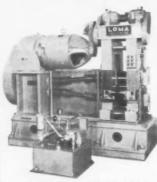
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Our standard line of equipment includes:

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LOMA 1960 Meetings **And Conventions**

Here's a rundown of the major meetings and conventions of trade associations and technical societies this year.

JANUARY

- CUTTING TOOL MANUFACTURERS ASSN.—Annual meeting, Jan. 28, Har-monic Club, Detroit. Association head-quarters are at 416 Penobscott Bidg., Detroit.
- INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Annual winter meeting, Jan. 18-19, Warwick Hotel, Phila. As-sociation headquarters are at 1145-19th St., N.W., Washington.
- INSTITUTE OF SCRAP IRON & STEEL, INC.—32nd Annual convention, Jan. 10-13, Fontainebleau Hotel, Miami Beach, Fla. Institute headquarters are at 1729 "H" St., N.W., Washington.
- MALLEABLE FOUNDERS SOCIETY— Semi-annual meeting, Jan. 15, Shera-ton-Cleveland Hotel, Cleveland. Society headquarters are at 781 Union Com-merce Bidg., Cleveland.
- METAL LATH MANUFACTURERS ASSN.—Annual meeting, Jan. 27-28, Sheraton-Cleveland, Cleveland. Associa-tion headquarters are at Engineers Bldg., Cleveland.
- PLUMBING BRASS INSTITUTE Annual meeting, Jan. 25-27, Hollywood Beach Hotel, Hollywood, Fla. Institute headquarters are at One Gateway Center. Pittsburgh.
- SOCIETY OF AUTOMOTIVE ENGINEERS, INC.—Annual meeting, Jan. 12-16, The Sheraton-Cadillac and Stater Hotels, Detroit. Society headquarters are at 485 Lexington Ave., New York 12 (1997)
- SOCIETY OF PLASTICS ENGINEERS, INC.—Annual technical conference, Jan. 12-15, Conrad Hilton, Chicago. So-ciety headquarters are at 65 Prospect St., Stamford.
- TEEL KITCHEN CABINET MANU-FACTURERS ASSN.—Winter meeting, Jan. 18, Sheraton Tower Hotel, Chi-cago. Association headquarters are at 812 Engineers Bidg., Cleveland.
- STEEL PLATE FABRICATORS ASSN.

 —Annual meeting, Jan. 21-22, Roosevelt Hotel, New Orleans, La. Association headquarters are at 105 W. Madison St., Chicago,
- STEEL SHIPPING CONTAINER INST., INC.—Winter meeting, Jan. 19-20, St. Regis Hotel, New York. Institute head-quarters are at 600 Fifth Ave., New
- TRUCK TRAILER MANUFACTURERS ASSN.—19th Annual convention, Jan. 24-27, Hotel del Coronado, Coronado, Calif. Association headquarters are at 710 Albee Bidg., Washington.

FEBRUARY

ALLOY CASTING INSTITUTE - Midwinter management meeting, Feb. 4-5, Key Biscayne Hotel, Key Biscayne, Fla. Institute headquarters are at 1001 Franklin Ave., Garden City,

- AMERICAN COKE & COAL CHEMI-CALS INSTITUTE—Western regional meeting, Feb. 4, The Drake Hotel, Chi-cago. Institute headquarters are at 711 Fourteenth St., N.W., Washington.
- AMERICAN INSTITUTE OF CHEMICAL ENGINEERS—National meeting, Feb. 21-24, Biltmore Hotel, Atlanta. Insti-tute headquarters are at 25 W. 45th St., New York.
- AMERICAN SOCIETY FOR TESTING MATERIALS Committee week, Feb. 1-5, Sherman Hotel, Chicago. Society headquarters are at 1916 Race St.,
- INDUSTRIAL DIAMOND ASSN. OF AMERICA, INC.—Annual meeting and convention, Feb. 22-25, Hollywood Beach Hotel, Hollywood Beach, Fla. Association headquarters are at Box 175, Pompton Plains, N. J.
- THE METALLURGICAL SOCIETY OF AIME Annual meeting, Feb. 14-18, Hotel Statler Hilton & Sheraton-Atlan-tic Hotel, New York. Society head-quarters are at 29 W. 39th St., New York.
- OCIETY FOR NON-DESTRUCTIVE TESTING Symposium on Aircraft Components, Feb. 16-17-18, San An-tonio, Texas. Society headquarters are at 1109 Hinman St., Evanston.

MARCH

- ALUMINUM EXTRUDERS COUNCIL— Quarterly meeting, Mar. 9-11, Arawak Hotel, Jamaica, W. I. Council head-quarters are at 1015 Chestnut St.,
- ASSOCIATION OF IRON AND STEEL ENGINEERS—Western meeting, Mar. 7-8-9, St. Francis Hotel, San Fran-cisco. Association headquarters are at 1010 Empire Bldg., Pittsburgh.
- ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS— Spring membership meeting. Mar. 28, Pittsburgh-Hilton, Pittsburgh. Associa-tion headquarters are at One Gateway Center, Pittsburgh.
- ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS—Fall meeting, Sept. 12, Cavalier Club, Vir-ginia Beach, Va. Association headquar-ters are at One Gateway Center, Pitts-
- CAN MANUFACTURERS INSTITUTE, INC.—Annual meeting, Mar. 7, Wal-dorf-Astoria Hotel, New York. Institute headquarters are at \$21 15th St., N.W., Washington.
- ELECTRONIC INDUSTRIES ASSN.— Spring conference, Mar. 16-17-18, Stat-ler Hilton Hotel, Washington. Associa-tion headquarters are at 1721 DeSales St., N.W., Washington.
- FIRE EQUIPMENT MANUFACTURERS ASSN.—Annual meeting, Mar. 15-16, Barbizon-Plaza Hotel, New York. As-sociation headquarters are at 759 One Gateway Center, Pittsburgh.
- GAS APPLIANCE MANUFACTURERS ASSN., INC.—Annual meeting, Mar. 20-31-Apr. 1. The Greenbrier, White Sul-phur Springs, W. Va. Association head-quarters are at 60 E. 42nd St., New York.
- HOIST MANUFACTURERS ASSN.—Annual meeting, Mar. 1, Hotel Cleveland, Cleveland, Association headquarters are at One Thomas Circle, Washington.

MEETINGS

- THE INDUSTRIAL TRUCK ASSN.— Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Association headquarters are at One Gateway Center, Pittsburgh.
- MANUFACTURERS STANDARDIZA-TION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY—Annual meeting, Mar. 8-9-10, The Barbizon-Plaza Hotel, New York. Society headquarters are at 420 Lexington Ave., New York.
- THE MATERIAL HANDLING INSTI-TUTE, INC.—Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Institute headquarters are at One Gateway Center, Pittsburgh.
- MONORAIL MANUFACTURERS ASSN.
 —Spring meeting, Mar. 28-30, Pittsburgh-Hilton Hotel, Pittsburgh. Association headquarters are at 71
 West
 35th St., New York.
- NATIONAL ASSOCIATION OF COR-ROSION ENGINEERS—16th Annual conference & Corrosion Show, Mar. 14-18, Memorial Auditorium, Dallas. Association headquarters are at 1061 M & M Bldg., Houston.
- NATIONAL ASSN. OF WASTE MATE-RIAL DEALERS, INC.—47th Annual convention, Mar. 13-15, Waldorf-Astoria Hotel, N. Y. Association headquarters are at 271 Madison Ave., N. Y.
- PRESSED METAL INSTITUTE—Spring technical meeting, Mar. 23-24-25, The Pick-Carter Hotel, Cleveland. Institute headquarters are at 3673 Lee Rd., Cleveland.
- SCALE MANUFACTURERS ASSN., INC.
 —Spring meeting, Mar. 22-23, Washington. Association headquarters are at 1 Thomas Circle, Washington.
- SCIENTIFIC APPARATUS MAKERS ASSN.—Annual meeting, Mar. 27-31, Boca Raton Hotel & Club, Boca Raton, Fla. Association headquarters are at 20 North Wacker Drive, Chicago.
- SOCIETY FOR NON-DESTRUCTIVE TESTING—Third International Conference, Mar. 15-21, Tokyo, Japan. Society headquarters are at 1109 Hinman St., Evanston.

APRIL

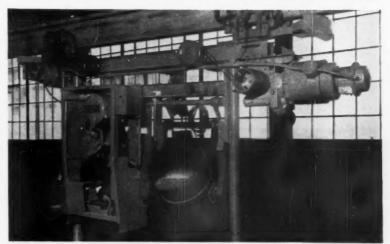
- AMERICAN HOME LAUNDRY MANU-FACTURERS' ASSN.—Annual convention, Apr. 27-30, Diplomat Hotel, Hollywood by-the Sea, Fla. Association headquarters are at 20 N. Wacker Drive, Chicago.
- AMERICAN MACHINE TOOL DISTRIB-UTORS ASSN.—Spring meeting, Apr. 18-19-20, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are 1500 Massachusetts Ave., N.W., Washington.
- AMERICAN SOCIETY OF LUBRICA-TION ENGINEERS—Annual meeting, Apr. 19-20-21, Netherland-Hilton, Cincinnati. Society headquarters are at 5 North Wabash Ave., Chicago.
- AMERICAN SOCIETY OF TOOL EN-GINEERS—Tool show and annual convention, Apr. 21-28, Detroit. Society headquarters are at 10700 Puritan Ave., Detroit.
- AMERICAN WELDING SOCIETY— Spring meeting, Apr. 25-29, Los Angeles. Society headquarters are at 33 W. 39th St., New York.
- AMERICAN ZINC INSTITUTE, INC.— Annual meeting, Apr. 7-8, Chase-Park Plaza Hotel, St. Louis, Mo. Institute headquarters are at 60 E. 42nd St., New York.
- ASSN. OF IRON AND STEEL ENGI-NEERS—Spring meeting, Apr. 25-26-27, Sheraton Hotel, Phila. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

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MEETINGS

- LEAD INDUSTRIES ASSN. & AMERI-CAN ZINC INSTITUTE—Joint annual meeting, Apr. 6-8, Park Plaza Hotel, St. Louis. Association and Institute headquarters are located at 60 E. 42nd St., New York.
- THE METALLURGICAL SOCIETY OF AIME—Nuclear Congress, Apr. 3-8, The Coliseum, New York. Society headquarters are at 29 W. 39th St., New York.
- THE METALLURGICAL SOCIETY OF AIME—National Open Hearth Steel Conference & Blast Furnace, Coke Oven, & Raw Material Conference, Apr. 4-6, Palmer House, Chicago. Society headquarters are at 29 W. 39th St., New York.
- METAL LATH MANUFACTURERS ASSN.—Spring meeting, Apr. 28-29, Hotel Tropicana, Las Vegas, Nev. Association headquarters are at Engineers Bldg., Cleveland.
- METAL POWDER INDUSTRIES FED-ERATION—Powder Metallurgy Show, Apr. 25-26-27, Drake Hotel, Chicago, Headquarters are at 60 E. 42nd St., New York.
- METAL POWDER INDUSTRIES FED-ERATION—16th Annual meeting, Apr. 25-26-27, Drake Hotel, Chicago. Headquarters are at 60 E. 42nd St., New York.
- NATIONAL ASSN. OF SHEET METAL DISTRIBUTORS—Spring meeting, Apr. 20-22, Deshler Hilton Hotel, Columbus. Association headquarters are at 1900 Arch St. Phila.
- NATIONAL METAL TRADES ASSN.— New England Congress meeting, Apr.

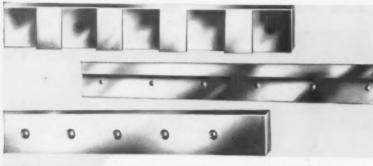
- 5. Sheraton-Plaza Hotel, Boston. Association headquarters are at 337 W. Madison St., Chicago.
- RAIL STEEL BAR ASSN.—Annual meeting, Apr. 20-21-22, Palm Beach Biltmore Hotel, Palm Beach, Fla. Association headquarters are at 38 South Dearborn St., Chicago.
- STEEL, SHIPPING CONTAINERS INST., INC.—Annual meeting, Apr. 12-14, The Breakers, Palm Beach, Fla. Institute headquarters are at 600 Fifth Ave., New York.

MAY

- AIRCRAFT INDUSTRIES ASSN. OF AMERICA—Spring meeting, Board of Governors, May 18-20, Williamsburg, Va. Association headquarters are 610 Shoreham Bldg., Washington.
- ALUMINUM WARES ASSN.—Annual meeting, May 23-24, Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at First National Bank Bldg., Pittsburgh.
- AMERICAN COKE & COAL CHEMI-CALS INSTITUTE — Eastern regional meeting, May 16-17, The Westchester Country Club, Rye, N. Y. Institute headquarters are at 711 Fourteenth St., N.W., Washington.
- AMERICAN FOUNDRYMEN'S SOCIETY

 -National Castings Congress & Exposition, May 9-13, Convention Hall,
 Phila. Society headquarters are at Golf
 and Wolf Rds., Des Plains, Ill.
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.—Engineering conference, May 5-6, Brown Palace Hotel, Denver. Institute headquarters are at 101 Park Ave., New York.
- AMERICAN IRON AND STEEL INSTI-TUTE—General meeting, May 25-26, Waldorf-Astorla Hotel, New York. Institute headquarters are at 150 East 42nd St., New York.
- AMERICAN MINING CONGRESS—Coal convention, May 9-11, Pittsburgh. Headquarters are at 1206-18th St., N.W., Washington.
- AMERICAN SOCIETY FOR METALS— Southwestern Metal Exposition & Congress, May 9-13, State Fair Park, Dallas. Society headquarters are at Metals Park, Novelty, O.
- AMERICAN STEEL WAREHOUSE ASSN., INC.—Annual meeting, May 15-16-17-18, The Fontainebleau Hotel, Miami Beach, Fla. Association headquarters are at 540 Terminal Tower, Cleveland.
- AMERICAN SUPPLY & MACHINERY MFRS. ASSN., INC.—Triple industrial supply convention, May 23-24-25, Chicago, Association headquarters are at 2130 Keith Bldg., Cleveland.
- THE ANTI-FRICTION BEARING MAN-UFACTURERS ASSN., INC.—Annual meeting, May 11-12-13, Westchester Country Club, Rye, N. Y. Association headquarters are at 60 East 42nd St., New York.
- CONCRETE REINFORCING STEEL IN-STITUTE—Annual meeting, May 30-June 4, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 38 S. Dearborn St., Chicago.
- COPPER & ERASS RESEARCH ASSN.

 —Annual meeting, May 15-18, The
 Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington
 Ave., New York.
- THE ELECTROCHEMICAL SOCIETY, 1NC.—Spring national meeting, May 1-2-3-4-5, LaSalle Hotel, Chicago. Society headquarters are at 1860 Broadway, New York.
- ELECTRONIC INDUSTRIES ASSN.— Annual convention (36th) May 18-19-20, The Pick-Congress, Chicago. Association headquarters are at 1721 De-Sales St., N.W., Washington.
- INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Annual spring meeting,



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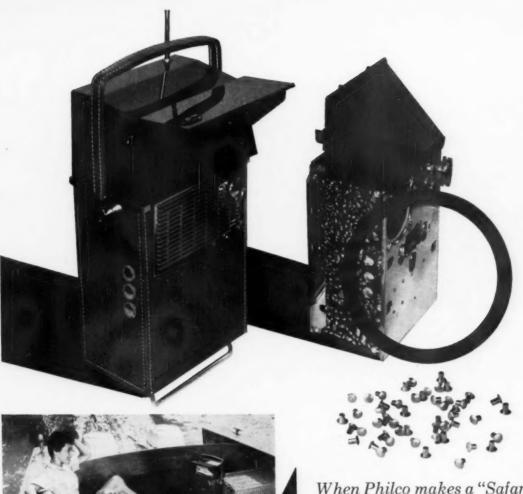
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MEETINGS

- May 22-25, The Homestead, Hot Springs, Va. Association headquarters are at 1145-19th St., N.W., Washington.
- INTERNATIONAL ACETYLENE ASSN.
 —Annual convention, May 9-10, SR.
 Francis Hotel, San Francisco. Association headquarters are at 30 E. 42nd St.,
 New York.
- MAGNESIUM ASSN.—Annual membership meeting, May 23-27, London, England. Association headquarters are at 122 E. 42nd St., New York.
- NATIONAL ASSN. OF ARCHITEC-TURAL METAL MANUFACTURERS —22nd Annual convention, May 1-7, Boca Raton Hotel and Club, Boca Raton, Fla. Association headquarters are at 228 North LaSalle St., Chicago.

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81	Tons	36"	×	84"	×	360"
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81	Tons	3/4"	×	96"	×	360"
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150	NT-	-1/4" x	84"	×	240"
100	NT-	1/4" x	96"	×	240"
100	NT-	7 1	72"	×	240"
100	NT-	%" x	72"	×	240"
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117.	Tons	28	GSG			120	

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- NATIONAL ASSN. OF PURCHASING AGENTS—45th Annual international convention and inform-a-show, May 22-25, The Biltmore Hotel, Los Angeles. Association headquarters are at 11 Park Place, New York.
- NATIONAL FLUID POWER ASSN.— Spring meeting, May 8-12, Grand Hotel, Point Clear, Ala. Association headquarters are at 5595 N. Hollywood Ave., Milwaukee.
- NATIONAL MACHINE TOOL BUILD-ERS ASSN.—58th Spring meeting, May 5-6, The Roosevelt Hotel, New York. Association headquarters are at 2139 Wisconsin Ave., N.W., Washington.
- SOCIETY FOR NON-DESTRUCTIVE TESTING—2nd Southwest Regional Convention, May 9-11, The Baker Hotel, Dallas, Texas. Society headquarters are at 1109 Hinman St., Evanston.
- WIRE ASSN.—Regional meeting, May 4-5, Sheraton Hotel, Phila. Association headquarters are at 453 Main St., Stamford, Conn.
- WIRE REINFORCEMENT INSTITUTE

 —Annual spring meeting, May 30-31,
 The Greenbrier, White Sulphur Springs,
 W. Va. Institute headquarters are at
 National Press Bldg., Washington.

JUNE

- ALLOY CASTING INSTITUTE—Annual meeting, June 19-21, The Homestead, Hot Springs, Va. Institute headquarters are at 1001 Franklin Ave., Garden City.
- AMERICAN GEAR MANUFACTURERS ASSN.—44th Annual meeting, June 6-7-8, The Homestead, Hot Springs, Va. Association headquarters are at One Thomas Circle, Washington.
- THE AMERICAN SOCIETY OF ME-CHANICAL ENGINEERS — Semiannual meeting, June 5-9, Statler Hilton, Dallas. Society headquarters are at 29 West 39th St., New York.
- AMERICAN SOCIETY FOR TESTING MATERIALS—Annual meeting & apparatus exhibit, June 26-July 1, Chaifonte-Haddon Hall, Atlantic City. Society headquarters are at 1916 Race St. Philo
- THE ASSN. OF AMERICAN BATTERY MANUFACTURERS, INC. Spring convention, June 1-2-3, The Ambassador Hotel, Los Angeles. Association head-quarters are at 19 N. Harrison St., East Orange, N. J.
- DROP FORGING ASSN.—Annual meeting of members, June 26-29, Seignlory Club, Canada. Association headquarters are at 1121 Illuminating Bldg., Cleveland.
- EDISON ELECTRIC INSTITUTE—Annual convention, June 6-8, Atlantic City. Institute headquarters are at 420 Lexington Ave., New York.
- INDUSTRIAL SAFETY EQUIPMENT ASSN., INC.—Annual meeting, June 21-22-23-24, Sedgefield Inn, Greensboro, N. C. Association headquarters are at 420 Lexington Ave., New York.
- THE INDUSTRIAL WIRE CLOTH IN-STITUTE — Annual resort meeting, June 3-7, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 630 Third Ave., New York.
- INSTITUTE OF APPLIANCE MANU-FACTURERS, 28th Annual convention, June 6-9, Netherland-Hilton, Cincinnati, Institute headquarters are at Shoreham Hotel, Washington.
- MALLEABLE FOUNDERS SOCIETY— Annual meeting, June 6-8, Elbow Beach Surf Club, Hamilton, Bermuda, Society headquarters are at 781 Union Commerce Bldg., Cleveland.
- THE MATERIAL HANDLING INSTI-TUTE, INC.—New England Show, June 6-8, Commonwealth Armory, Boston. Institute headquarters are at One Gateway Center, Pittsburgh.
- METAL POWDER INDUSTRIES FED-ERATION-International Powder Metallurgy conference, June 13-14-15, Bilt-

- more Hotel, New York. Headquarters are at 60 E. 42nd St., New York.
- STEEL TANK INSTITUTE—Semi-annual meeting, June 23-24, Broadmoor, Colorado Springs, Colo. Institute headquarters are at 120 S. LaSalle St., Chicago.
- WIRE ASSN.—Regional meeting, June 7-8, Statler Hotel, Los Angeles. Association headquarters are at 453 Main St., Stamford, Conn.

JULY

- AMERICAN ELECTROPLATERS' SO-C1ETY-47th annual convention, July 24-28, Statler Hotel, Los Angeles. Society headquarters are at 445 Broad St., Newark, N. J.
- CAST IRON PIPE RESEARCH ASSN.— Annual meeting, July 13-14, The Seaview Country Club, Absecon, N. J. Association headquarters are at Prudential Plaza, Suite 3440, Chicago.
- METAL LATH MANUFACTURERS ASSN.—Summer meeting, July 20-21, Carlton House, Pittsburgh, Association headquarters are at Engineers Bldg.,
- TRUCK TRAILER MANUFACTURERS ASSN.—12th Annual summer meeting, July 10-13, The Homestead, Hot Springs, Va. Association headquarters are at 710 Albee Bldg., Washington.

SEPTEMBER

- AMERICAN DIE CASTING INSTITUTE

 Annual meeting, Sept. 14-15-16, Edgewater Beach Hotel, Chicago. Institute
 headquarters are at 366 Madison Ave.,
 New York
- AMERICAN MACHINE TOOL DISTRIB-UTORS ASSN.—Annual meeting, Sept. 3-4, LaSalle Hotel, Chicago. Association headquarters are at 1500 Massachusetts Ave., N.W., Washington.
- AMERICAN WELDING SOCIETY—Fall meeting, Sept. 26-30, Pittsburgh, Soclety headquarters are at 33 W. 39th St., New York.
- ASSN. OF IRON AND STEEL ENGINEERS Convention & Exposition, Sept. 27-28-29-30, Cleveland Public Auditorium, Cleveland. Association head-quarters are at 1010 Empire Bldg., Pittsburgh.
- ASSN. OF LIFT TRUCK & PORTABLE ELEVATOR MANUFACTURERS— Fall meeting. Sept. 12. The Cavalier Club, Virginia Beach, Va. Association headquarters are at One Gateway Center, Pittsburgh.
- ELECTRONIC INDUSTRIES ASSN.— Fall conference, Sept. 13-14-15-16, French Lick-Sheraton, French Lick, Ind. Association headquarters are at 1721 DeSales St., N.W., Washington.
- FARM EQUIPMENT INSTITUTE—Annual convention, Sept. 25-28, The Statler Hilton Hotel, Dallas, Texas. Institute headquarters are at 608 S. Dearborn St., Chicago.
- NATIONAL FOUNDRY ASSN.—62nd Annual meeting, Sept. 22-23, Edgewater Beach Hotel, Chicago. Association headquarters are at 53 W. Jackson Blvd., Chicago.
- PORCELAIN ENAMEL INSTITUTE, 1NC.—Annual meeting, Sept. 25-28, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 1145-19th St., N.W., Washington.

OCTOBER

- AMERICAN COKE & COAL CHEMICALS INSTITUTE—Annual meeting, Oct. 17-18, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 711 Fourteenth St., N.W., Washington
- AMERICAN GAS ASSN.—Annual convention, Oct. 10-12, Atlantic City. Association headquarters are at 420 Lexington Ave., New York.



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MEETINGS

- AMERICAN GEAR MANUFACTURERS ASSN.—Semi-annual meeting, Oct. 24-25-26, Edgewater Beach Hotel, Chicago. Association headquarters are at One Thomas Circle, Washington.
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.—Annual convention, Oct. 31-Nov. 3, Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 101 Park Ave., New York.
- AMERICAN MINING CONGRESS—Mining Show, Oct. 10-13, Convention Center, Las Vegas, Nev. Headquarters are at 1200 18th St., N.W., Washington.

AMERICAN SOCIETY FOR METALS-

National Metal Exposition & Congress, Oct. 17-21, Phila. Convention Hall, Phila. Society headquarters are at Metals Park, Novelty, O.

- AMERICAN STANDARDS ASSN., INC.— 11th National conference on standards, Oct. 25-26-27, Sheraton-McAlpin Hotel, New York. Association headquarters are at 70 East 45th St., New York.
- CONVEYOR EQUIPMENT MANUFAC-TURERS ASSN.—Annual meeting, Oct. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at No. 1 Thomas Circle, Washington.
- THE ELECTROCHEMICAL SOCIETY, INC.—Fall national meeting, Oct. 9-10-11-12-13, Shamrock Hotel, Houston, Tex. Society headquarters are at 1860 Broadway, New York.

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TURERS ASSN., INC.—42nd Annual meeting, Oct. 20-21-22, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at One Thomas Circle, Washington.

- GRAY IRON FOUNDERS' SOCIETY, INC.—Annual meeting, Oct. 12-14, Netherland Hilton Hotel, Cincinnati. Society headquarters are at 930 National City-E. 6th Bidg., Cleveland.
- MAGNESIUM ASSN.—16th Annual convention, Oct. 17-18, Cleveland. Association headquarters are at 122 E. 42nd St., New York.
- NATIONAL FLUID POWER ASSN.— Fall meeting, Oct. 30-Nov. 2, The Edgewater Beach Hotel, Chicago. Association headquarters are at 5595 N. Hollywood Ave., Milwaukee.
- NATIONAL TOOL & DIE MANUFAC-TURERS ASSN.—Annual convention, Oct. 19-23, Leamington Hotel, Minneapolis. Association headquarters are at 907 Public Square Bldg., Cleveland.
- PRESSED METAL INSTITUTE—Annual meeting. Oct. 10-14. Shawnee Inn, Shawnee-On-Delaware. Pa. Institute headquarters are at 3673 Lee Rd., Cleveland.
- SOCIETY FOR NON DESTRUCTIVE TESTING—20th Annual convention, Oct. 17-21, Phila., Pa. Society head-quarters are at 1109 Hinman St., Evanston.

NOVEMBER

- AIRCRAFT INDUSTRIES ASSN. OF AMERICA—Fall meeting, Members & Board of Governors, Nov. 16-18, Phoenix, Ariz. Association headquarters are at 610 Shoreham Bidg., Washington.
- AMERICAN MINING CONGRESS—Coal Div. Conference, Nov. 18, Penn-Sheraton Hotel, Pittsburgh. Headquarters are at 1200 18th St., N.W., Washington.
- AMERICAN SOCIETY OF TOOL ENGINEERS—Western tool show and semiannual convention, Nov. 14-18, Los Angeles. Society headquarters are at 10700 Puritan Ave., Detroit.
- ELECTRONIC INDUSTRIES ASSN. Winter conference, Nov. 29-30-Dec. 1, Fairmont Hotel, San Francisco. Association headquarters are at 1721 De Sales St., N.W., Washington.
- NATIONAL ELECTRICAL MANUFAC-TURERS ASSN.—Annual convention, Nov. 14-17, Hotel Traymore, Atlantic City. Association headquarters are at 155 E. 44th St., New York.
- NATIONAL MACHINE TOOL BUILD-ERS ASSN.—59th Annual meeting, Nov. 2-4, The Homestead, Hot Springs, Va. Association headquarters are at 2139 Wisconsin Ave., N.W., Washington.
- PORCELAIN ENAMEL INSTITUTE, INC.—Shop Practice Forum, Nov. 2-3-4. University of Illinois, Urbana, Ill. Institute headquarters are at 1145–19th St., N.W., Washington.
- WIRE ASSN.—Annual convention, Nov. 14-17, LaSalle Hotel, Chicago, Association headquarters are at 453 Main St., Stamford, Conn.

DECEMBER

- AMERICAN INSTITUTE OF CHEMICAL ENGINEERS—Annual meeting, Dec. 4-7, Statler Hotel, Washington. Institute headquarters are at 25 W. 45th St., New York.
- AMERICAN MINING CONGRESS—Annual membership meeting, Dec. 5, Plaza Hotel, New York. Headquarters are at 1200 18th St., N.W., Washington.
- THE METALLURGICAL SOCIETY OF AIME—Electric Furnace Conference, Dec. 2, Morrison Hotel, Chicago. Society headquarters are at 29 W. 39th St., New York.



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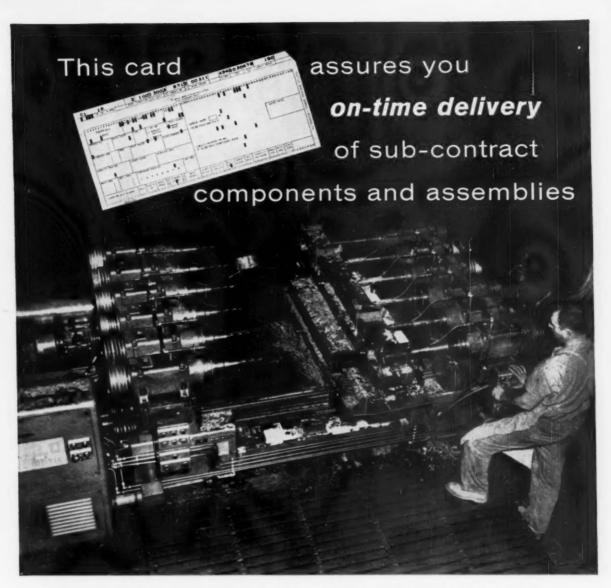


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1960 Directory Of Trade Associations

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It includes headquarters addresses and names of society officers.

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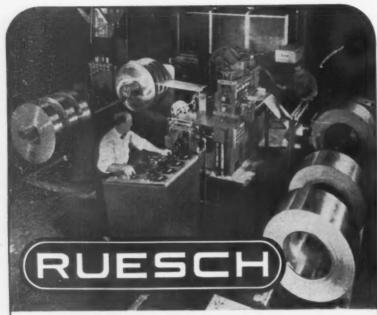
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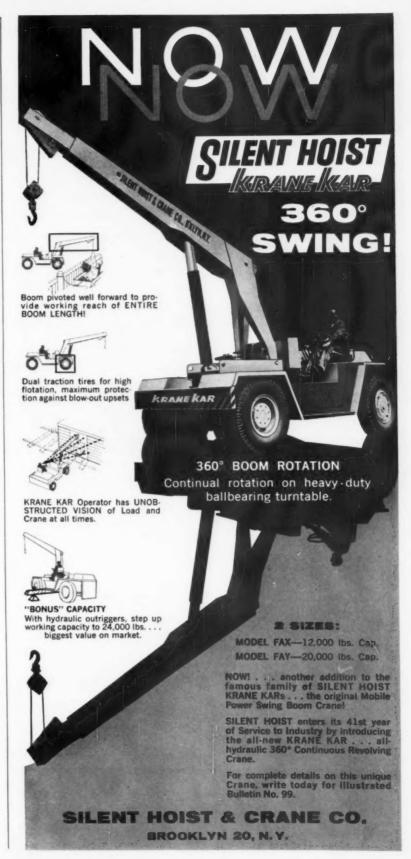
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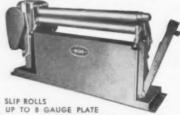


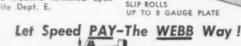
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One Gateway Center. Pittsburgh 22, Pa.
Exec. Secy.; Hanson & Shea, Inc.

Porcelain Enamel Institute. Inc. 1145 19th St., N.W., Washington 6, D. C. Pres.; R. N. Smith

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Power Crane and Shovel Assn. 75 West St., New York 6, N. Y. Secy.: Herbert S. Blake, Jr.

Power Transmission Council, Inc. 320 Broadway, New York 7, N. Y. Vice Pres.: E. R. Rath

Pressed Metal Institute 3673 Lee Rd., Cleveland 20. Ohio Managing Dir.: M. A. Daschner

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Register Manufacturers Assn. 2066 Radnor Ave., Columbus 24, Ohio Pres.; C. J. Pearson Resistance Welder Manufacturers Assn. 1900 Arch St., Philadelphia 3, Pa. Secy. Treas.: R. Bruce Wall

Roof Drainage Manufacturers Institute 22 West Monroe St., Chicago 3, Ill. Managing Dir.; 8, M. Van Kirk

Roll Manufacturers Institute 1026 Farmers Bank Bldg., Pittsburgh 22, Pa. Exec. Secy. & Treas.: M. K. Ulrich

Rolling Mill Machinery and Equipment Assn. 1026 Farmers Bank Bldg., Pittsburgh 22, Pa. Secy.-Treas.: M. K. Ulrich

Scale Manufacturers Assn., Inc. 1 Thomas Circle. Washington 5, D. C. Exec. Secy.: Arthur Sanders

Scientific Apparatus Makers Assn. 20 N. Wacker Drive (Rm. 3120), Chicago 6, III. Exec. Vice Pres.; Kenneth B. Anderson

Shipbuilders Council of America 21 West St., New York 6, N. Y. Sec.-Treas.: C. C. Knerr

Society for Non-Destructive Testing 1109 Hinman St., Evanston, III. National-Secy.: Philip D. Johnson

Society of Automotive Engineers, Inc. 485 Lexington Ave., New York 17, N. Y. Secy.: John A. C. Warner

Society of Plastic Enginers, Inc. 65 Prospect St., Stamford, Conn. Exec. Secy.: Thomas A. Bissell

Spring Manufacturers Assn. Box 1440, Bristol, Conn. Secy.: George E. Underwood

Spring Washer Institute 75 West St., New York 6, N. Y. Secy.: Herbert S. Blake, Jr.

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Steel Castings Institute of Canada 568 Booth St., Ottawa, Canada

Steel Founders' Society of America 606 Terminal Tower, Cleveland 13. Ohio Exec. Vice Pres.: F. Kermit Donaldson Steel Joist Institute
Dupont Circle Bldg., 1346 Connecticut Ave., N.W.,
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Managing Dir.: C. H. Luedeman

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Steel Products Warehouse Assn. 2100 Random Rd., Box 1984 Cleveland 6, Ohio Pres.: Clayton Grandy

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Tin Research Institute, Inc. 492 W. 6th Ave. Columbus 1, Ohio Mgr.: R. M. MacIntosh

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Truck Trailer Manufacturers Assn. 710 Albee Bldg. Washington 5, D. C. Managing Dir.: John B. Hulse

Tubular and Split Rivet Council 53 Park Pl. New York 7, N. Y. Secy.: George P. Byrne

United States Machine Screw Service Bureau 53 Park Pl. New York 7, N. Y. Secy.: George P. Byrne

The Valve Manufacturers Assn. 60 E. 42nd St., New York 17, N. Y. Secy.-Treas.: George A. Cooper

Welded Ring Manufacturers Assn. One Gateway Center Pittsburgh 22, Pa. Secy.: Hanson & Shea, Inc.

Wire Assn. 453 Main St. Stamford, Conn. Exec. Secy.: Richard E. Brown

Wire Reinforcement Institute National Press Bldg. Washington 4, D. C. Managing Dir.: Frank B. Brown



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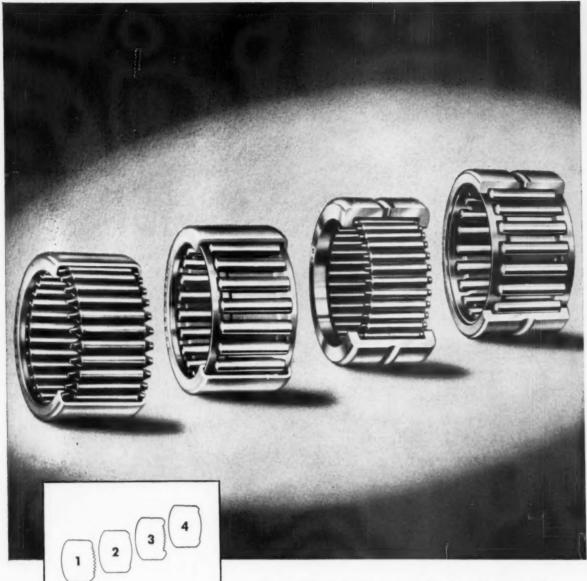


This unique installation combines a 2-ton, 38'5" span circular crane and a 20-ton, 24'2" span annular crane, each with a 130' lift. One engineering problem solved: On the annular crane the outside wheels must travel at 195 FPM; the inside wheels at 125 FPM. Conco builds cranes for virtually every class of service, including specialized spark and explosion-proof cranes, two-hook cranes, and cranes employing closed-circuit TV remote control operation. A complete design service, including sample specifications, is available. Write us for bulletin 500B covering the Conco line of cranes, hoists and trolleys.

Material Handling Division
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Torrington developed the Needle Bearing and its specialized variations. This breadth of experience assures impartial engineering recommendations based on specific application requirements. You can rely on Torrington to recommend the most compact and economical design compatible with operating conditions and performance requirements. Call on your Torrington representative for help in applying the right bearing in the right place. The Torrington Company, Torrington, Conn.—and South Bend 21, Indiana.

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Tarringten Drewn Cup Reller Bearing...
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construction for easy assembly...shaftriding retainer.

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for use with thin section or split housing where
extreme impact loads require heavy outer
race...maximum shock resistance...full
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stability provided by end-guiding ... flangeriding retainer ... unit design.

All of these types of bearings are available

New Equipment and Machinery



Air-Operated Numbering Press Is Automatic

A high-speed serial numbering press is air-operated, electrically controlled, fully automatic, and capable of numbering 4500 pieces per hour. The numbering head advances one digit with each up stroke of the press, with indexing accomplished by a small air cylinder. The

machine is furnished complete with all controls, including some that permit independent operation of various components for setup purposes. If preferred, the basic press is available with tooling for single-station marking, forming, and bending. (Noble & Westbrook Mfg. Co.) For more data circle No. 1 on postcard, p. 367



Vacuum Lifting System for General-Purpose Use

A new vacuum lifting system can be used for general-purpose overhead crane work, or can be customengineered to perform automatic or semi-automatic material - handling operations. Very smooth or very rough surfaces are handled with equal ease. Grippers come in various shapes, in sizes up to 25-in. diam, with capacities to 2000 lb per gripper. The system features very fast transfer cycles. (Whiting Corp.)

For more data circle No. 2 on postcard, p. 367

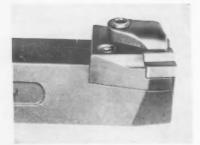


Tool Analyser Accomodates Many Small Tools

Originally designed as a tap analyser, a new model, designated as a tool analyser, will accommodate many other small cutting tools, such as drills, mills, and reamers. The tool is precisely chucked, aligned in the same position in which it would be used, and in relation to dimensional scales of the analyser. This permits the relation of tool

geometry to production results, as profile and other tool characteristics are checked at magnifications up to 40X. This analyser will take shank diameters from 0.006 to 1% in. Special fixturing and accessories permit the checking of a wide size range of tools, and even workpieces. (Stocker & Yale, Inc.)

For more data circle No. 3 on postcard, p. 367



Throwaway Holder Contains Two Sub-Assemblies

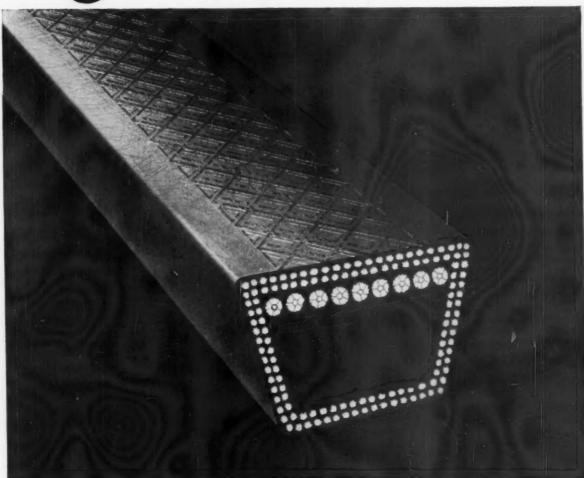
An unusually simple holder for throwaway inserts contains only two major sub-assemblies — the shank assembly and the chipbreaker-and-clamp assembly. There are only eight parts in all. The more perishable parts are the least complicated and least costly to replace. The

chipbreaker is attached to the clamp, and rises with it to permit indexing of the insert. This toolholder comes in 112 standard shank styles and sizes, for square or triangular inserts, right- or left-hand. Two sizes of Allen wrench maintain the whole line. (Wesson Co.)

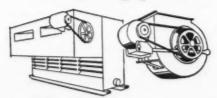
For more data circle No. 4 on postcard, p. 367



Patented curing method keeps all the steel pulling members in the same plane They remain straight, are never wavy.



Quiet...smooth... vibration at the vanishing point



For silent and efficient operation of fans, pumps, compressors, blowers—for best power transmission in air-conditioning and refrigeration units—specify U. S. Auto AirCon Steel Cable V-Belts. These belts have everything required in a belt for air-conditioning use. They are in a class by themselves. Forget your negative experiences with other V-belts. U. S. Auto AirCon V-Belts have pulling cords of steel. A new, patented curing method and electronic tensioning of the steel cords free this belt from vibration. Power is transmitted smoothly, quietly, efficiently. It has been proven in rugged, automotive air-conditioning service. This belt has outlasted other belts up to 2½ times longer.

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Ductile Cast Iron (Grade 60-45-10) was chosen to cast these 12" Rotovalve parts. It is well known for toughness, machinability, and long wearing characteristics.

The body (left) was dry sand molded. The flange diameter is 25½" and it is 32½" f-f. Rough weight — 836 lbs. The plug (right) was machine molded, its diameter is 19 15/16" x 16½" and it has a 12" waterway. Rough weight — 288 lbs.



Ductile cast iron is widely used for pressure castings, compressor castings, valves, cylinders and pumps. Let us know your needs!

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Tool Rotating
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.

".. we would never hesitate

to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: "We have been using your Roebling Herringbone" for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope—two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibil-

ity, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

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New Materials and Components



Magnetic-Coupled Drives Offer Fine Control

Stepless adjustment over a wide speed range, ease of presetting speeds, and responsiveness to feedback, suit a new line of adjustable-speed drives to automatic control and general industrial use. Coming in sizes from 5 to 100 hp, they feature fewer moving parts for longer life and reduced maintenance. Coup-

pling between motor and drive uses the eddy-current magnetic principle, offering versatile performance over a constant-torque speed range. Ratings through 20 hp can operate down to 100 rpm at rated torque a speed range of 17:1. (General Electric Co.)

For more data circle No. 5 on postcard, p. 367

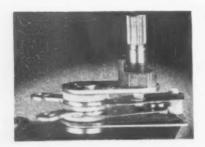


Wound-Wire Porous Metal Ups Fluid Filtration

Wound-wire porous metal extends the range of filtration and non-filtration applications. The new filter is wound into hollow cylinders or cones from almost any metal that can be drawn into fine wire. Principal use is in the field of fluid filtration. Pore sizes range from 2

to 1000 microns. The wires are metal bonded at all contact points; therefore the pore sizes are maintained with no shifting. Common backwashing cleans the filter for reuse. (Bendix Filter Div., Bendix Aviation Corp.)

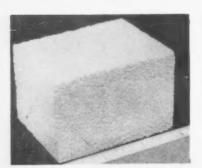
For more data circle No. 6 on postcard, p. 367



Thermostat Limits Lower Operating Range

A positive-off thermostat permits cut-out of thermostatic control through manual operation of the adjusting stem. It provides positive control of electrical circuits in response to temperature changes, and it's designed for use with appliances, heating and ventilating

equipment. The restricting device can cut out the thermostatic control altogether, or it can limit the lower range of operation. Temperature range is 0°-650°F, rated at 15 amp on 115 v ac; 10 amps on 230. (Norwalk Thermostat Co.)



High-Temperature Ceramic Brick Purges Gases

Absorbent properties of new ceramic insulating bricks permit gases to pass through for purging or evacuation. The ceramic matérial has the density of a 1600°F insulating firebrick, and an insulating value comparable to a 2300°F firebrick. Yet it can be used up to 3400°F. It's readily cut, sawed, or

filed. The ceramic material (aluminum oxide), formed in convenient brick size of $2\frac{1}{2} \times 4\frac{1}{2} \times 9$ in., has met immediate acceptance as lining for hydrogen furnaces, for vacuum processing, and as a catalyst support in generators. (Ceramic Div., Ipsen Industries, Inc.)

For more data circle No. 8 on postcard, p. 367

Penetrating Primer

Containing a phenolic resin, a new metal primer has increased adhesion, flexibility, blister resistance, and surface penetration on both clean and rusty metals. It soaks into the pores of the metal, and is thus both in and on the surface. (Minnesota Linseed Oil Co.)

For more data circle No. 9 on postcard, p. 367

Angle Drive

A right-angle drive has a heavyduty bearing structure to permit production use without overheating. Ball races ground in the ends of hardened gears provide both thrust and radial stability. Transmission



ratio is 1-to-1 for 1½ hp at 3000 rpm, or ⅓ hp at 750 rpm. Maximum allowable speed is 6000 rpm. The device can be used with air drills or flexible shafts, or with standard ⅓, 5/16, and ¾-in. electric drills. Center holes are provided, in dead alignment with the shafts. (Price & Rutzebeck.)

For more data circle No. 10 on postcard, p. 367

Copper-Stainless Tube

A new type of clad tubing has properties not found in any single metal or alloy. It is highly corrosion-resistant and has high lateral thermal conductivity. It is designed for heat-exchange pressure tubes and for conduction of fluid or gas under pressure at elevated temperature. With the tensile properties of stainless steel, it combines the good brazing surface of copper. It is available with either copper or stainless as the outside cladding material, in an OD size range from 0.030 to 0.750 in., with wall thicknesses from 3 to 45 thousandths. (Metals & Controls Div. of Texas Instruments Inc.)

For more data circle No. 11 on postcard, p. 367

ALL

The cost of ALLEN Hex-Socket Cap Screws is only a minor fraction of your assembly costs... be sure you're getting the timesaving, cost-saving advantages of genuine Allens!

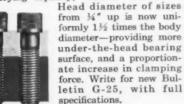
Ever since Allen first produced the hex socket head screw nearly fifty years ago, specifying genuine Allens (made by Allen of Hartford) has been a sure way to guarantee dependable threaded fastening.

Only genuine Allens have Leader Points that make starting easier, and greatly minimize danger of cross threading. Genuine Allens are "pressurformd" to preserve the long fibers uncut throughout the length of the screw, giving stronger sockets for greater tightening torque.

Write for samples and engineering data. See how *genuine* Allens will make your product better.



Allen's new 1960 Series Socket Head Cap Screws give up to 2½ times more load carrying capacity, without indentation.

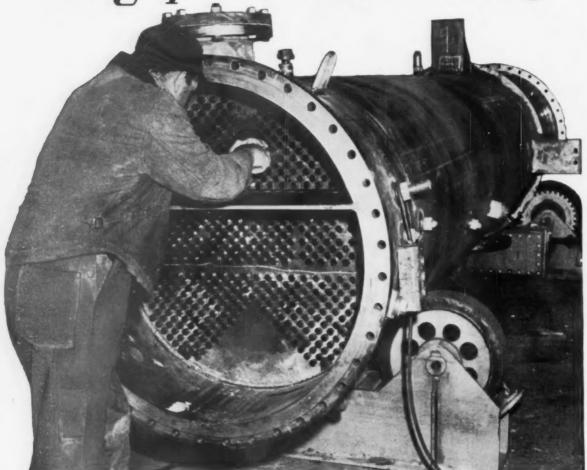


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Waste heat turns into \$40,000 saving thru *[arpenter* Stainless Tubing



Reclaiming valuable heat from spent black liquor vapors is a real money-saving operation with this 2600 sq. ft. 3-pass surface condenser. In the process of condensing distillation products out of a heat vapor line from a multiple-effect evaporator, the unit extracts over 19 million Btu's per hour from these vaporous products and entrained non-condensable sulphides. With this recovered heat, clean filtered water used for washing bleached pulp and other plant operations is pre-heated 25 to 30°F. Steam demand on the mill's boilers for water heating is thereby greatly reduced and fuel consumption cut. The net result of this heat recovery operation is a saving of approximately \$40,000 yearly.

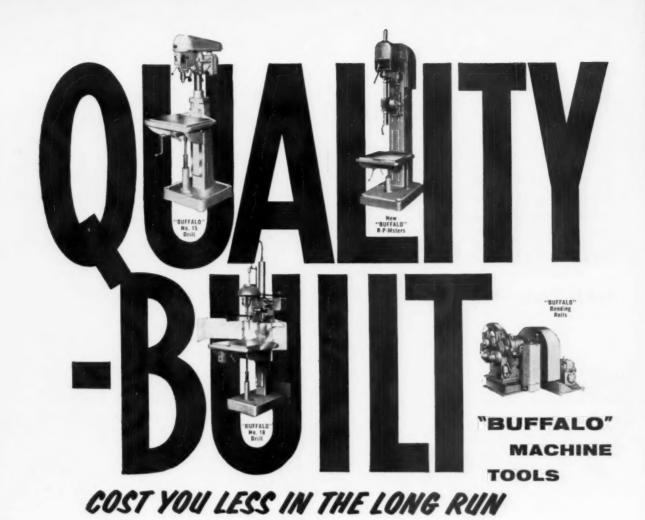
Contributing importantly to the success and economy of this recovery unit is Carpenter Type 304 Stainless Heat Exchanger Quality Tubing. High operating efficiency is sustained, downtime and maintenance are minimized, loss of capacity due to scale formation is avoided and long tube life is assured. Close uniform tolerance of the tubing saves installation time and costs. As a result, the use of this stainless tubing has become standard practice

in these surface type condensers for black liquor evaporator service.

Now you can get cost-saving Carpenter Stainless Heat Exchanger Quality Tubing from our large mill stocks. Types 304 and 316 are available in all popular sizes and gauges. Contact our nearest office for prompt, helpful service on your next order. Send for our up-to-date Selecting and Buying Guide, Bulletin T.D. 120. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.



Stainless Tubing & Pipe



Only Buffalo gives you the "Q" factor...an important extra in the quality of our design and construction. This means greater economy for you...extended trouble-free productive service.

Now, in a broader line of new and improved models, BUFFALO machine tools are an even better value. That's why you will find these units especially worth investigating.

Buffalo No. 15 Drills — New design improvements provide easier, faster operation, maximum flexibility and even greater accuracy. Available in bench, floor and pedestal models from 1 to 6 spindles. Write for Bulletin 4024.

<u>Buffalo No. 18 Drills</u> — Heavier than No. 15 yet highly sensitive, the No. 18 is ideal for a wide variety of shop operations. Capacity is 1" in cast iron. Features include precision ball bearing spindle, easy-to-operate 3-spoke feed and quick,

convenient adjustments. Choose from 19 models to suit your exact needs. Write for Bulletin 3123-E.

<u>Buffalo R-P-Mster</u> — These famous variable speed drilling machines now offer capacities up to 2". Exclusive Torque-Controlled Power Feed protects bits and machine. Operator can use maximum speed and feed for a given hole size with no danger of overloading. Designed for ultra-smooth, accurate operation. Write for Bulletin 3257-C.

<u>Buffalo Bending Rolls</u> — Ideal for fast, low-cost bending of structurals into circles, spirals or segments. Easy roll changes and adjustments eliminate need for expensive dies. Operators need not be highly skilled. Upper roll is quickly lowered, set or released hydraulically. Horizontal or vertical types in a capacity range to suit almost every need. Write for Bulletin 352-D.

For full details on these and all Buffalo machine tools, contact your Buffalo machine tool dealer... or write us direct.



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DRILLING PUNCHING SHEARING BENDING

New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 367.

cial cutter sizes. A 4-to-1 increased speed ratio gives the cutter four times its original speed. The attachment is adjustable from 0 to 1/16 in. off center. (Portage Double-Quick, Inc.)

For free copy circle No. 12 on postcard, p. 367

entire cycle takes five minutes. (Frederick Gumm Chemical Co. Inc.)

For free copy circle No. 13 on postcard, p. 367

End-Mill Driver

A new end-mill driver with eccentric micrometer adjustment permits the use of end mills up to ½ in. undersize. Offset orbital motion permits greater precision, saves time in milling to center line on keyways, and reduces the need for spe-

Fast Finisher

A pamphlet describes two powdered compounds designed to remove light oil and phosphate steel surfaces rapidly in one operation prior to painting. Used for soaking or spraying, they produce little foam, and no scale on tanks. The

Machine Control

A numerical-control machine positioning system provides automatic positioning of a two-axis table from a pre-programmed punched 1-in. tape. A third axis can be added. Accuracy and repeatibility are both ±0.0002 in. (Hughes Aircraft Co.)

For free copy circle No. 14 on postcard, p. 367

Conveyor Lubricators

An eight-page catalog describes new models of automatic conveyor lubricators. They feature complete adjustability, applicability to all systems, and elimination of all drippage. (J. N. Fauver Co., Inc.) For free copy circle No. 15 on postcard, p. 367

Cryogenics

A folding pocket card presents the physical-property equivalents of some cryogenic fluids in tabular form. Fluids covered are those most common in the chemical and missile industries. (Linde Co.)

For free copy circle No. 16 on postcard, p. 367

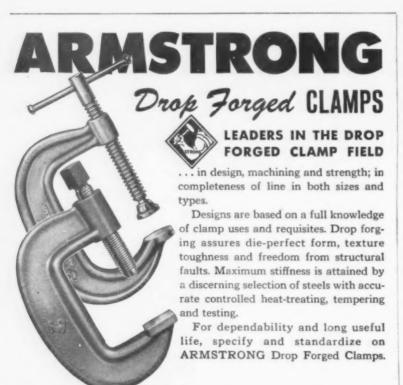
Material Handling

A large folder points out that one dollar out of every four spent on production goes into material handling. It goes on to recommend a line of material-handling equipment for efficiency and time savings. (Towmotor Corp.)

For free copy circle No. 17 on postcard, p. 367

Brazing Alloys

A folder describes special lowtemperature alloys for brazing and soldering of such materials as alu-



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It took tens of thousands of different items to build the N. S. Savannah, world's first atom-powered merchant ship. And each must perform its part perfectly.

The super-critical job of lifting the "heart" of the nuclear reactor—a 105-ton pressure vessel-was assigned to a Yellow Strand Safety Sling. The Sling, a 45' grommet 2\%" in diameter, made of 6 parts of 1/8" Yellow Strand "POWERSTEEL" Wire Rope was employed to raise and lower the vessel during testing operations at the Babcock & Wilcox plant at Barberton, Ohio-and then carry it to a special heavy-duty railroad car -and finally set it in place aboard the N.S.

Savannah. Placement of the reactor within the hull was complicated by the 3° launching angle, and the narrow margin of error of 1/8". With Yellow Strand Safety Sling, the job was easily and quickly completed.

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FREE LITERATURE

minum, iron, copper, and their alloys. Characteristics, applications, and use of these alloys are described. (All-State Welding Alloys Co.)

For free copy circle No. 18 on postcard, p. 367

Differentials

Mechanical differentials are the subject of a 24-page technical booklet. It describes them, shows how they work, and design advantages. The application of a line of them to precision instrument and servo control work is illustrated. (PIC Design Corp.)

For free copy circle No. 19 on postcard, p. 367

Dry Coolant

A four-page brochure describes a dry coolant treatment for grinding wheels. Wheels impregnated with the material cut faster with a clean, heat-free action. The result is burn-free grinds with improved micro-finish. A molecular graphite is the base of the material. (King Graphite Products, Inc.)

For free copy circle No. 20 on postcard, p. 367

Press Trip Control

Described in a catalog is a trip control which can easily be applied to manually operated stamping machines, air presses, riveters, and other production equipment to make it safer and more productive. Illustrations of 15 varied applications are included. (Micro Switch)

Gearbelt Drives

A line of gearbelt drives combines the flexibility of belt drives with the advantages of chain and gear drives. Power is transmitted by positive engagement of belt teeth with pulley grooves. The line is specified in a 56-page catalog. (Browning Mfg. Co.)

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QUALITY CONTROL

That's the secret of good breeding . . . and why Federal Ball Bearings are all champions.

Take race grinding: the operator must gage race diameter, roundness, contour, centerline, eccentricity of raceway with O.D., parallelism of the race with the face of the bearing ring...and finish. Then line inspectors double check.

This is typical of the quality control all along the Federal production line. Double work? Sure! But it means a bearing as close to perfection as a bearing can get. One that's twice as reliable, too. That's why they're specified by so many top industrial companies. Why not put them to work yourself? Start today by sending for the Federal catalog where you'll meet hundreds of different type ball bearings...all top breed...in 12,000 sizes!

The Federal Bearings Co., Inc., Poughkeepsie, N. Y.



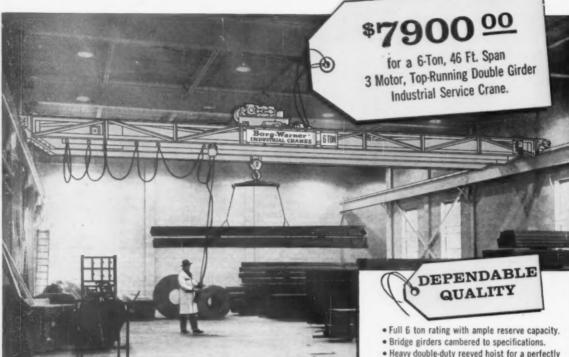
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Federal BALL BEARINGS

FEDERAL ON FILM—A 16 mm. color sound film takes you through our 400,000 sq. ft. plant. Loaned free. Just ask for it.



Now you can afford Borg-Warner Quality in your next overhead Crane...



Advanced engineering and standardization make... Borg-Warner Industrial Cranes

BETTER VALUES at LESS COST

Borg-Warner crane engineers and production men have taken a new look at the entire line and come up with important economies through extensive use of standardized interchangeable components. Because these savings are passed along to you, you get more crane for your money when you specify Borg-Warner Industrial!

Efficient overhead materials handling pays off. You get more overhead storage space than fork truck handling provides. You benefit from aisles and work areas uncluttered by floor-type handling equipment. You can reach all areas under the crane, the full length of the runway.

If you are planning a new factory building, an addition to present facilities or a modernization program, it will pay you to look to Borg-Warner Industrial Cranes for the best values in overhead materials handling equipment.

- · Heavy double-duty reeved hoist for a perfectly plumb lift.
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- · All welded jig bored, jig assembled end trucks.
- · Long life precision ball and roller bearings
- · Precision assembly of girders and end trucks with fitted bolts in reamed holes.
- · Outrigger machinery girder construction.
- · Magnetic bridge brake.
- . Heavy duty gear reduction bridge drive.
- · Fluid coupled bridge and trolley drives.
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The crane illustrated is a typical double girder installation. Span may be shorter or longer with greater or smaller capacity and for lighter or heavier duty, intermittent or continuous. Whatever your overhead handling requirements Borg-Warner Industrial Cranes can supply your needs with quality equipment at a price you can afford!



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Continued

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Hot-dip aluminum coating molecularly bonds a coating of pure aluminum to a ferrous metal, with a hard, impervious, abrasion resistant interlayer of Fe-Ala alloy uniting the two. This prevents atmospheric corrosion and high temperature oxidation of the ferrous parts. (Arthur Tickle Engineering Works, Inc.)

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Beryllium Forgings

A pictorial description of the design and fabrication of beryllium heat-sinks for N.A.S.A.'s Project Mercury covers the production of large, high purity beryllium billets. The 76-in. beryllium shields are used to test the design of manned orbital space capsules. (The Brush Bervllium Co.)

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A line of mechanical, electromagnetic and photoelectric counters are described in a folder. These counters permit an operator to preselect a desired number of pieces, turns, strokes, lengths, or other units, simply by setting the desired number on the face of the instrument. (Veeder-Root, Inc.)

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Abrasive Performance

Performance and statistical data compiled in extensive research and experimentation is revealed in a handbook. Topics discussed include: How performance controls economy in blast cleaning abrasives; how abrasive breakdown

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Employing case histories, an illustrated eight-page bulletin gives details of successful applications in making jigs, fixtures, metal forming dies, duplicating masters and other tools. It describes how manufacturers have saved time and reduced costs in their tooling programs. (Devcon Corp.)

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A bulletin, "Creative Engineering Dares to Challenge Tradition," describes special machines, automotive transfer and automation equipmeni Installation pictures are featured. (Jorgensen Conveyors, Inc.)

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Circuit Breakers

A 40-page bulletin pictures and describes molded circuit breakers ranging from the smallest, for lighting circuit protection, to 100,000ampere interrupting capacities and other special purpose equipment. (I-T-E Circuit Breaker Co.)

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Overhead Handling

Overhead handling of loads from 1/4 to 60 tons is described in a catalog covering more than 20 different kinds of cranes, hoists, and specialty and accessory items. Special and general purpose equipment are featured. (The Harrington Co.)

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Heavy duty pumps are featured in an informative bulletin. Another bulletin covers grout pumps. Economical pumping performance in handling slush, mud and core drilling are stressed with the grout pumps; solvents, sewage, tar and

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FREE LITERATURE

mash are a few of the items handled with the heavy duty pumps. (Wagener Pump Div., Canton Stoker Corp.)

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Rust Preventative

The rust preventative can be used with a variety of different oil carriers. Complete application and test data, as well as military specifications, are included in a bulletin. (L. Sonneborn Sons, Inc.)

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Gold Finishes

Bronzeless gold spray finishes are discussed in an eight-page booklet. The finishes provide an appearance comparable to coatings made by the use of bronze powder. And they offer advantages over the conventional powder finishes by being lower in cost, harder, non-tarnishing, non-gelling and easier to apply. (Bee Chemical Co.)

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Portable Welders

A brochure illustrates and describes a versatile line of portable resistance welders available for the metalworking industry. (The Federal Machine and Welder Co.)

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Vee Belt Drives

Compact packages made possible through high-strength belts and sheaves handle up to three times the horsepower of conventional belt drives occupying the same space. (T. B. Wood's Sons Co.)

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Electric Power Drives

Completely revised, a 68-page catalog aids in quick and easy selection of electric power drives. Appearing for the first time are data and prices on a new line of dripproof motors. Prices, dimensions and modifications for squirrel cage motors, gearmotors, speed reducers, right angle gearmotors, right angle variable speed drives and variable speed drives are included. (Sterling Electric Motors)

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Materials Handling

Safe electrification on overhead materials handling equipment reduces maintenance and provides assurance against power interruptions. Maximum safety and long equipment life are featured in an illustrated bulletin. (Cleveland Tramrail Div., The Cleveland Crane & Engineering Co.)

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Pillow Blocks

A new line of malleable taperedroller-bearing pillow blocks is covered in a four-page pamphlet. They feature eccentric locking collar. labyrinth grease seals, and elongated bolt holes. (Browning Mfg. Co.)

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Chemical Govt. Specs

A new catalog lists 1000 official Government Specifications covering a company's line of adhesives, sealants, paints, cleaning compounds, and chemical compounds. (Magic Chemical Co.)

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Power Supplies

Heavy-duty power supplies, ac and dc, are covered in a catalog. They are designed to regulate voltage, current, or power for industrial processes, and are manufactured to customer specifications. (Hevi-Duty Electric Co.)

For free copy circle No. 40 on postcard

Ball Bearing Units

Compact cast iron pillow blocks and take-up units and frames are described in a 24-page catalog. The units are available with sealed precision ball bearing cartridges in shaft sizes from ½ to 2-7/16 in. Also illustrated are economical commercial sealed bearings. (Roberts Mfg. Co.)

For free copy circle No. 41 on postcard



No. 1 and No. 2 Hot-Dip Galvanizing Lines, Martins Ferry Plant, Wheeling Steel Corporation

Wean, Wheeling and Galvanizing ...

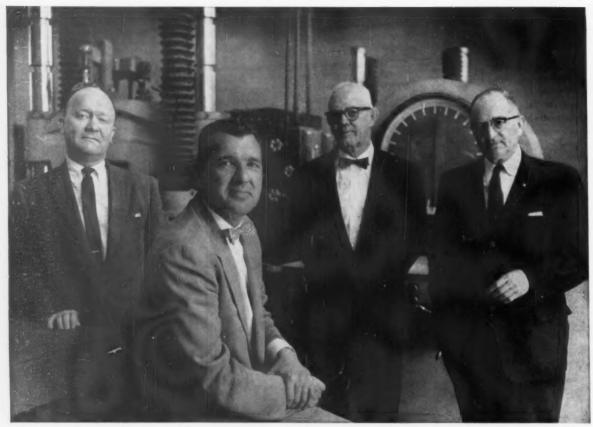
The advantages of corrosion-resistant, zinc-coated sheets might well have been lost to history had it not been for the development of continuous, hot-dip galvanizing lines. Such lines brought galvanized sheets within the rigid limitations of acceptable product and did so at much lower operating costs.

The Wean Engineering Company worked in close cooperation with the Wheeling Steel research department on the development, design, and construction of these lines at the Martins Ferry plant. The lines are currently producing a wide range of top quality galvanized sheets and coils at speeds up to 300 fpm.

Wean has designed and built galvanizing lines for a wide variety of customer requirements. Why not take advantage of Wean's *creative engineering* experience on your next coating line project.



Now the nation's third largest steel plate producer



Protecting product quality is the responsibility of Lukens' Metallurgical Division. Four members of this expanded control team are, left to right:
Sam Lemmon, Metallurgical Service; Lou Mandich, Manager; Howard Turner, Inspection; and Joe Althouse, Chief Metallurgical Engineer.

LUKENS STRENGTHENS THE GUARD ON QUALITY

To the steel buyer, Lukens' new ranking as a steel plate producer means more than increased tonnage. It promises complete confidence in buying decisions. For, together with the expansion of its steel making facilities, Lukens has strengthened its control over plate quality at every step—from open hearth to customer's shop.

The men assembled above in Lukens' new Physical Testing Laboratory spearhead this increased control. Working with the industry's broadest range of plate materials—from ordinary carbon steel to ultrasonically tested hullplate for nuclear submarines—

these experts represent the emphasis Lukens places on dependable plate quality.

Now consolidated into one closely working team are these vital functions: Inspection, Plant Metallurgy, Metallurgical Development, Quality Control and Metallurgical Service. Under Lou Mandich's direction, and together with Lukens' other operating and marketing groups, they are successfully pursuing the overall aim of our expansion program: capacity and quality levels to meet the growing needs of our plate fabricating customers.

Lukens Steel Company, Coatesville, Pa.



NEW CAPACITY ~ NEW QUALITY

SERVING INDUSTRY WITH A WIDE RANGE OF SPECIALTY CARBON, ALLOY, ARMOR AND CLAD STEEL PLATE . HEADS . PLATE SHAPES . PLATE-MATE WELDING ELECTRODES AND WIRE

The Iron Age Summary

Why Steel Prices Will Go Up

Settlement was too rich for some steel producers to absorb without price hikes.

Some estimates go as high as \$5 a ton, but other indications point to a \$4 maximum.

■ The government-sponsored steel labor settlement will probably cost steel users a few extra dollars a ton for their steel soon.

The cost of the agreement, which the industry reluctantly accepted after terrific government pressure, is too rich for the blood of many steel companies.

How Much Cost—The settlement will run to 41¢ an hour (some figure it at 39¢) over a 30-month period. This includes a 4¢ an hour cost-of-living raise, effective immediately, which the union claimed was due because of the old contract.

Many companies must have price relief to absorb the governmentdictated settlement.

It is unlikely that any increases will exceed \$5 a ton. And it is more

likely that they may run less than \$4 a ton. If some medium or smaller-sized companies raise their prices more, the competitive situation will bring them into line.

Not Voluntary—Just when prices will go up is uncertain, but some increases may come soon. In any case, they will come.

The settlement leaves some scars. Although Administration sources referred to the settlement as "voluntary," this is stretching it a little. The politicians took over some time ago.

Company and union relations are less bitter than they were a few weeks ago, but there is a lot of healing to be done before the next contract time in June, 1962.

Over Their Heads — David J. McDonald, USWA president, again went over the heads of negotiators and reached the major framework of the agreement with the heads of the eleven negotiating companies.

Missionary work and steering on the framework and policy was carried out in Washington by the top executives of the three major producers.

On cold-blooded analysis, the union, through government help, scored a major victory. The companies, under government pressure, lost their battle along major fronts. The well-publicized local practices hassle is being settled along the lines the union argued.

Market Impact—The end of the negotiations, which also ended the threat of a renewed strike Jan. 26, brought relief to steel users, but no immediate easing in steel supplies.

However, the assurance of full shipments brought an easing of tension and was reflected in some developments in the premium price market. One indication was the cancelling of at least one conversion deal by a major automaker and uncertainty about continuation of others.

On most products, the market remained tight, but consumers now have assurance of uninterrupted steel operations.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,707	2,717	2,689	2,085
Ingot Index				
(1947-1949=100)	168.5	169.1	167.4	129.8
Operating Rates				
Chicago	95.0	94.0	93.0	79.0
Pittsburgh	96.0	98.0*	96.0	70.5
Philadelphia	100.0	101.0*	103.0	71.0
Valley	92.0	93.0*	95.0	71.0
West	88.5	93.0*	94.5	80.0
Cleveland	98.0	98.0*	95.5	81.0
Buffalo	105.0	107.0	107.0	66.0
Detroit	100.0	99.5*	94.0	97.0
South	93.0	89.0	86.5	71.0
South Ohio River	98.0	102.0*	100.0	82.0
Upper Ohio River	94.0	94.0*	93.0	86.0
St. Louis	86.0	97.5*	102.0	90.0
Aggregate	95.0	96.0	95.0	73.6

Prices At a Glance

(Cents per lb unless otherwise	noted) This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	6.19
Pig Iron (Gross ton)	\$66.41	\$66.41	\$66.41	\$66.41
Scrap No. 1 hvy				
(Gross ton)	\$41.50	\$41.17	\$42.50	\$40.17
No. 2 bundles	\$27.83	\$27.83	\$28.83	\$29.33
Nonferrous				
Aluminum ingot	28.10	28.10*	26.80	26.80
Copper, electrolytic	33.00	33.00	33.00	29.00
Lead, St. Louis	11.80	11.80	12.80	12.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	99.375	98.50	99.00	98.25
Zinc, E. St. Louis	12.50	12.50	12.50	11.50

*Revised

Steel: Purchaser's Prime Goal

There is no doubt that there will be a rush to get steel in the first half of 1960.

A. G. Ruediger, director of purchases, Carrier Corp., says this will dominate purchasing.

• Steel will be the target of purchasing activity in first half of 1960. There is no doubt there will be a general rush to rebuild strike-depleted steel inventories during the first six months of the New Year, A. G. Ruediger, director of purchases, Carrier Corp., and chairman, Steel Committee, National Assn. of Purchasing Agents, told The IRON AGE.

NAPA members report no serious shortages other than steel and

A. G. RUEDIGER: A general rush to rebuild inventories.

add they hope to have inventories balanced with production by late April or early May. However, cautions Mr. Ruediger, these dates have been set mainly by larger steel users with strong mill relationships. And some steel items, particularly galvanized and cold-rolled sheets, will be short for longer periods. Production cutbacks because of lack of these seem likely.

Normal State—Aim is to have inventories geared to immediate production needs by the end of the first quarter, with exception of specific items. "However," says Mr. Ruediger, "this does not mean that a satisfactory inventory can be built into pipelines that would permit changing schedules as can be done during normal times."

Metalworking purchasing agents generally will be satisfied with a "normal" 30-day inventory and will not push for surplus steel stocks. There appears to be little sentiment for hedge buying against possible price increases. NAPA members look for no steel price increases in 1960. They are relying heavily on Roger Blough's promise that U. S. Steel (and hence the industry) will not raise prices if a labor contract can be negotiated without government mandate. Some purchasing agents argue that even with a dictated contract, steel mills will probably hold to present prices through 1960.

Good Profit Picture—Buyers following this reasoning point to high order level at mills, permitting the steel industry full operation and a satisfactory profit picture. Such an argument is predicated on the assumption that even a governmentwritten contract would not be overwhelmingly inflationary. However, even the most optimistic purchasing agents admit there is as yet no sign from mills that prices will be held under these circumstances.

Steel dominates the list of metalworking materials in short supply. And a resumption of the steel strike would certainly bring further shortages of components manufactured from steel. But most materials so far are in at least adequate supply.

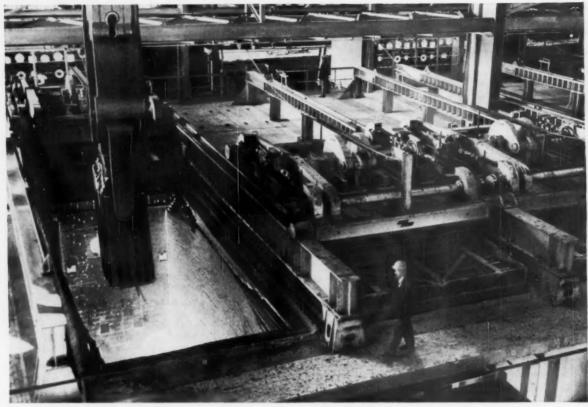
Even the long copper strike has not yet caused any great hardship as far as copper products are concerned, Mr. Ruediger says. A shortage of copper items may develop at a future date, but so far supplies are ample. The threat of a shortage appears greatest for raw copper, and price increases in the near future seem most likely for copper and copper products, NAPA members feel.

Most Wanted List—Most-wanted steel items in first half, in addition to galvanized and cold-rolled sheets, will be wide plate, light bar-size angles, lightweight wide - flange beams and tinplate. Just how critical these items will be is uncertain, probably will not be fully known until the strike picture clears up.

Tight money, often mentioned as a threat to inventory and purchasing policies, may be overrated as a villain, Mr. Ruediger says:

"In my opinion, tight money will not seriously affect the inventory and purchasing policies of the metalworking industry next year. Since we are talking about tight money, it seems to me that the present interest rates are really what would have been termed more normal than any we have had for a long period of years, in that interest rates have had a tendency to lag and have not yet bounced back to a normal level since the 1930's."

HAGAN COMBUSTION CONTROL



Part of the twelve new pits at Lukens Steel Company. Equipped with Hagan automatic combustion control, these pits will handle ingots up to 75 tons in size; each pit is capable of holding 200 tons.

for twelve new soaking pits at Lukens Steel

At Lukens Steel Company, the nation's leading specialist in steel plate, twelve massive new soaking pits are designed to heat record-size, 75-ton ingots to 2350°F. Since most of the steels to be treated in these pits will be various types of alloys, the control of furnace atmosphere is critical. Hagan fuel-air ratio control maintains excess air at the required level so that each alloy receives the conditions necessary for its optimum heating. The wide turndown range possible with Hagan equipment assures that pit atmospheres will be held accurately during the entire soaking cycle.

These new pit controls, a part of Lukens' \$33 million expansion program, are only a portion of the Hagan systems installed at the plant. A total of 27 pits are equipped with Hagan controls, as are open hearth and sidedoor furnaces. Hagan equipment is in use in many other applications throughout the plant. Hagan has earned a reputation for reliability and low maintenance cost, and operators like the good housekeeping possible with pneumatic controls.

A Hagan engineer will be glad to discuss metallurgical furnace controls to fit your particular requirements. Write or phone the address below.

HAGAN CHEMICALS & CONTROLS, INC.

DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA. In Canada: Hagan Corporation (Canada) Limited, Toronto European Division: Via Flumendosa No. 13, Milano, Italy



Hagan Power Positioner operating combustion air damper. Specially designed for high temperature work, this model is equipped with silicone piston packing and receiver diaphragms.



Section of soaking pit control panel. Hagan Ring Balance meters' wide turndown range permits accurate recording of flows as low as 6% of full scale.

Steel Capacity Hits New Record

Steelmakers in the U.S. now have an annual capacity totaling 148.5 million tons.

Electric furnace tonnage made the biggest gain during the past year.

 America's steelmaking capacity has increased again, for the 13th year in a row.

Total annual steel capacity as of Jan. 1, 1960 is 148,570,970 tons, according to the American Iron and Steel Institute. This is a gain of 937,300 tons over previous figures.

The new capacity is 62 pct greater than it was when World War II ended. It is also more than 31 million tons above the industry's greatest annual production, the record 117 million tons poured in 1955.

More Electric Furnaces — The largest gain during 1959 came in electric furnace capacity. Capacity of electric furnaces is now 14.3 million net tons. This is an advance of more than 900,000 tons over previous totals. Electric furnaces now account for 9.7 pct of total steel capacity.

Openhearth furnace capacity rose last year by 93,250 tons. Combined capacity of openhearths is now 126.6 million net tons a year, more than 85 pct of total annual capacity.

More Oxygen Steel — Facilities for oxygen steelmaking increased 124,240 tons during 1959. Basic oxygen process capacity now totals 4,157,400 tons annually, against 4,033,160 tons when last year started

During 1959, gains were made in

blast furnace capacity, but coke oven capacity declined. Blast furnace capacity rose by 1.8 million net tons to a new total of 96.5 million net tons a year. However, coke oven capacity dropped from 73.0 million tons to 72.3 million net tons a year.

Sheet and Strip — As the steel strike ends, mills are booked through June on flat-rolled products. In some cases, books are not yet open officially for the second quarter. But heavy demand should fill them up quickly once they are opened.

Cold-rolled and galvanized sheet remain the most critical products. But automakers are putting heavy pressure on strip mills for delivery. Buyers of flat-rolled products are on a quota basis at the mills. One sheet mill man says, "Customers are still buying on a hand-to-mouth basis." Service centers are also having trouble building inventories.

Plates and Shapes—Heavy steel producers feel strike settlement may

PURCHASING AGENT'S CHECKLIST

Business Outlook-1960

Ten-year forecast shows what to expect for metalworking in the Soaring 60's. starts on P. 161

Survey of leading metalworking executives shows them optimistic about sales and profits in 1960. Prices expected to go up only slightly.

begins on P. 199

Individual reports for each industry starts on P. 204 release some steel orders for new plants and equipment. Construction work delayed by the strike should now move ahead. This, together with preparations for the spring building season, should step-up the market for plates and shapes.

Right now, one **Eastern** producer of structurals has orders booked through the first quarter. Another mill is quoting standard structurals for 10 to 12 week delivery. Wide flange beams are listed at 17 to 20 weeks.

Bar—Hot-rolled bar mills in the Midwest have run into some operating difficulties. This has cut down on their output and increased carryovers. As yet cold finishers haven't been hurt by these delays. But they are concerned about the future. Some cold drawers are trying without much success, to line up hot-rolled bars from other areas.

Tinplate—Mill shipments of tinplate are running close to capacity. It appears canmakers will get only about 3.5 million tons of tinplate in the first half. This will not provide any real inventory cushion. Not until the second half will the can companies have a chance to rebuild inventories. This belated buildup should keep tinplate demand strong in the second half. As a result, tinplate output for the year could hit a record 7 million tons.

Service Centers—Business at the warehouses should rebound this month. December sales topped most months in 1959, but did not hit the highs of October or November. The service centers are having difficulty increasing stocks. Sheet products are the worst off. There are also holes in bar inventories. Light plate is in good demand, but short supply. Only in structurals are the service centers in fairly good condition.

Wire—Wire mills, after a slow start, are improving deliveries. Some, however, are operating with heavy order carryovers. Manufacturers' wire is expected to run at capacity levels through the first half.

COMPARISON OF PRICES

Dec. 29

Steel Scrap Composites
Average of No. 1 heavy melting steel scrap
and No. 2 bundles delivered to consumers at
Pittsburgh, Philadelphia and Chicago.

(Effective Jan. 5, 1960)

of major producing	page are areas:	the average of various f.o.b. quotations Pittsburgh, Chicago, Gary, Cleveland,
Youngstown. Price changes from	previous	week are shown by an asterisk (*).

	Jan. 5	Dec. 29 1959	Dec. 8 1959	Jan. 6 1959
Flat-Rolled Steel: (per pound)	1366	1333	1303	1999
Hot-rolled sheets	5.10¢	5.10€	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	6.10	5.10
	7.425	7.425	7.425	7.425
Cold-rolled strip	5.80	5.30	5.39	5.30
Plate				13.55
Plates, wrought iron	18.55	13.55	13.55	
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	62.00
Fin and Terneplate: (per base bo				
Tinplate (1.50 lb.) cokes		\$10.65	\$10.65	\$10.65
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.35
Special coated mfg. ternes	9.90	9.90	9.90	9.90
Bars and Shapes: (per pound)				
Merchants bar	5.675€	5.675∉	5.675€	5.675€
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	6.50
Stainless bars (No. 802)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00€	8.00#	8.00∉	8.00∉
Raila: (per 100 lb.)				
Heavy rails	\$5.75	\$5.75	\$5.75	\$5.75
Light rails	6.725	6.726	6.725	6.725
Semifinished Steel: (per net ton)				
Rerolling billets		\$80.00	\$80.00	\$80.00
Slabs, rerolling		80.00	80.00	80.00
Forging billets		99.50	99.50	99.50
Alloys, blooms, billets, slabs		119.00	119.00	119.00
Wire Rods and Skelp: (per pound	0			
Wire rods	6.40¢	6.40¢	6.40¢	6.40e
Skelp		5.05	5.05	5.06
Finished Steel Composite: (per per Base price		6.1964	6.196¢	6.196

Pinished Steel Composite
Weighted index based on steel bars, shapes,
plates, wire, rails, black pipe, bot and cold
rolled sheets and strips.

Pig Iron Composite
Based on averages for basic iron at Valley
furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Jan. 5 1960 Dec. 8 Jan. 6 1959 1959 \$70.57 73.87 62.50 66.50 \$70.57 \$70.57 \$70.57 70.57 73.87 62.50 66.50 70.07 66.00 66.50 73.87 62.50 66.50 70.07 66.00 66.50 70.07 66.00 66.50 70.07 66.00 66.50 66.50 66.50 66.50 12.25 12.25 12.25 12.25 \$66.41 266.41 \$66.41 | Serap: (per gross ton) | No. 1 steel, Pittsburgh ... \$43.50* | No. 1 steel, Phila. area ... 41.60 | No. 1 steel, Chicago ... 39.50* | No. 1 bundles, Detroit ... 38.50* | Low phos., Youngstown ... 48.50* | No. 1 mach'y cast, Pittsburgh ... 54.50 | No. 1 mach'y cast, Phila. ... 54.50 | No. 1 mach'y cast, Chicago ... 60.50 \$43.50 34.50 42.50 36.50 45.50 50.50 \$42,50 \$42.50 41.50 39.50 37.50 44.50 40.50 40.50 49.50 55.50 48.50 55.50 54.50 60.50 53.50 \$42.50 \$40.17 Coke, Connellaville: (per net ton at oven) Furnace coke, prompt ...14.75-15.50 \$14.75-15.50 \$14.75-15.50 \$14.50 Foundry coke, prompt 18.50 18.50 18.50 18-18.50 29.00 29.00 98.25 11.50 12.80 26.80 74.00 33.00 99.00 12.50 12.80 26.80 74.00 36.00 29.50 36.00 29.50

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Steel Settlement Brightens Outlook

News of a new steel labor contract brought a new wave of optimism to the market.

Scrap purchases, limited or deferred during the period of uncertainty, are expected to increase.

 A wave of guarded optimism swept over the scrap market this week as news spread of the settlement of the lengthy steel labor negotiations.

While there were no significant mill purchases immediately following word of the new steel industry contract, the feeling was widespread that mills would shortly place tonnage orders for scrap.

Since steelmills resumed operations under the Taft-Hartley injunction they have been consuming scrap at a faster rate than it was being purchased.

At any rate, now that mills are assured uninterrupted operations at a high rate for some time to come, they should step up scrap purchases. Scrap prices will likely increase along with purchases, but mills have indicated a readiness to resist runaway prices.

Pittsburgh — News of the steel labor settlement brought price increases here as mills stepped up efforts to buy scrap. Immediately following the settlement, brokers began receiving feelers from the mills. Scrap men say interest is too widespread to permit quiet buying or buying at low prices. However, it is not clear how far consumers will go in supporting a stronger market. The prospect of strong de-

mand has stiffened broker resistance and raised prices of No. 1 dealer grades.

Chicago — Freezing winter weather, and a freezeup in scrap prices, keynoted a week of light trading. Out-of-area mills continue to take scrap from Chicago at prices over the local level, but local mills continue to buy small quantities at existing levels. Factory bundle prices stiffened slightly on new orders, and railroad grades and turnings are being held up in anticipation of price advances later in this quarter.

Philadelphia—Word of the steel labor settlement brought an immediate reaction from scrap brokers and dealers: "Our whole outlook has changed from pessimism to optimism." Only a few disagree with this view. However, there has been little immediate change in activity as the market continues easy, awaiting the next move by steel mills.

New York—Cheered by news of the end of the steel strike, the trade adopted a "wait and see" attitude. Dealers and brokers firmly expect new orders in the near future and stress that prices must go up to draw out material. But so far, prices are unchanged.

Detroit—Settlement of the steel strike should have a buoyant effect on the market. How great the effect will be in terms of dollars is hard to tell right now. Dealers scrap still has no takers. Mills can continue to run for a while on inventories plus scrap bought from January industrial lists.

Cleveland—A limited amount of new buying in the Valley confirmed some prices and advanced others. Two Valley mills bought industrial grades at \$49, the same as last month. Volume was off from recent months and consumers showed no interest in heavy melting scrap for openhearths. Selective buying had the effect of moving up prices for No. 1 dealer busheling.

St. Louis — The scrap market again was dull with movement near a standstill, but settlement of steel labor negotiations is expected to bring new activity to the market.

Cincinnati—Prices are unchanged here as mills and brokers are trying to gage the effects of the steel settlement. New prices for one mill are the same as for last month, but there hasn't been time enough to tell what the reaction of dealers will be. General feeling is that a stronger market can be expected.

Birmingham — Movement of scrap is moderate and prices are steady. A large local electric furnace mill released shipments held up since early in December. Dealers and brokers say the market has temporarily leveled off at present prices.

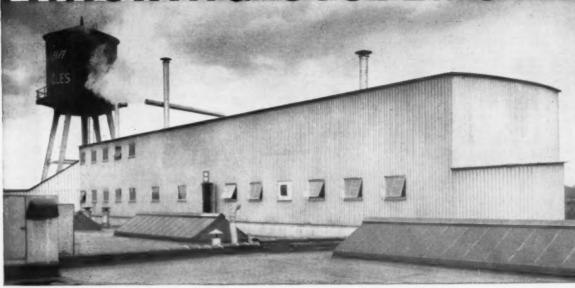
Buffalo—Dealers now await mill action in the wake of the steel settlement. Sales of No. 2 grades were made last week at quoted prices. They were for delivery in the first two weeks of this month.

Boston—The trade is waiting for post - settlement developments. Meanwhile, prices remain unchanged and activity in the export market continues at a slow pace.

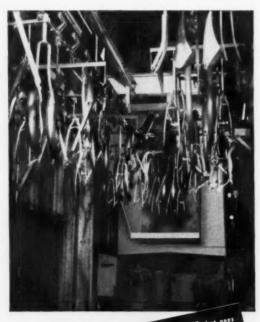
West Coast—No. 2 heavy melting steel can't find a home in Los Angeles. Exporting remains the only bright spot. All told, about 100,000 tons of scrap will leave West Coast ports in January.

Houston — The market here is quiet, although there is a flurry of export activity. However, exporters are quoting prices at \$2 less per ton than their recent prices.

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In 1950, another complete self-housed Prime-Coat Finishing System, shown above, was installed in its entirety on the roof—the design being a two-level arrangement with Dry-Off Oven, Finish Baking Oven and Heating Equipment Room on the upper level. This System handles Cleaning, Rust Proofing and Prime Coating of all parts produced which receive their 2nd and 3rd or final coat in the other two Finishing Systems.

In 1956, a third Finishing System was installed with 2nd Coat Finish Baking Oven, Cooling Area, 3rd or Final Coat Finish Baking Oven and Heating Equipment Room located on the Roof. Electrostatic Spray Booths for this System were located on the second floor of the plant directly below.

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MAHON

Pittsburgh

-
No. 1 hvy. melting\$43.00 to \$44.00
No. 2 hvy. melting 36.00 to 37.00
No. 1 dealer bundles 45.00 to 46.00
No. 1 factory bundles 50.00 to 51.00
No. 2 bundles 31.00 to 32.00
No. 1 busheling 43.00 to 44.00
Machine shop turn 25.00 to 26.00
Shoveling turnings 30.00 to 31.00
Cast iron borings 29.00 to 30.00
Low phos. punch'gs plate. 52,00 to 53,00
Heavy turnings 37.00 to 38.00
No. 1 DD have malely 10.00 to 30.00
No. 1 RR hvy. melting 49.00 to 50.00
Scrap rails, random lgth 60.00 to 61.00
Rails 2 ft and under 66,00 to 67,00
RR specialties 57.00 to 58.00
No. 1 machinery cast 55.00 to 56.00
Cupola cast 51.00 to 52.00
Heavy breakable cast 49.00 to 50.00
Chairline Cast 49,00 to 50,00
Stainless
18-8 bundles and solids 235.00 to 240.00
18-8 turnings115.00 to 120.00
430 bundles and solids130.00 to 135.00
410 turnings 60.00 to 65.00
*** ******** ****** ***** ***** ***** ****

Chicago

omeago		
No. 1 hvy. melting \$	39,00 to	\$40.00
No. 2 hvy. melting	36.00 to	37.00
No. 1 dealer bundles	40,00 to	41.00
No. 1 factory bundles	45.00 to	46.00
No. 2 bundles	26,00 to	
No. 1 busheling	39,00 to	40.00
Machine shop turn	22.00 to	23.00
Mixed bor, and turn,	24.00 to	25.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	24.00 to	25.00
Low phos. forge crops	54.00 to	55.00
Low phos. punch'gs plate,		
14 in, and heavier	51.00 to	52,00
Low phos. 2 ft and under.	49.00 to	
No. 1 RR hvy. melting	45.00 to	46.00
Scrap rails, random lgth	56.00 to	57.00
Rerolling rails	63.00 to	64.00
Rails 2 ft and under	62.00 to	
Angles and splice bars	54.00 to	55.00
RR steel car axles	59.00 to	60,00
RR couplers and knuckles	51.00 to	52,00
No. 1 machinery cast	60,00 to	
Cupola east	54.00 to	55.00
Cast iron wheels	48.00 to	
Malleable	62.00 to	63.00
Stove plate	50.00 to	
Steel car wheels	51.00 to	52.00
Stainless		
18-8 bundles and solids.2	20.00 to	225.00
18-8 turnings	20.00 to	125.00
430 bundles and solids1	20.00 to	125.00
430 turnings	60.00 to	65,00

Philadelphia Area

i inidacipina Area		
No. 1 hvy. melting\$4	11.00 t	\$42.00
No. 2 hvy, melting	37.00 t	38.00
No. 1 dealer bundles	15,00 t	
No. 2 bundles	25.00 t	26.00
No. 1 busheling	15.00 t	0 47.00
Machine shop turn	22.00 t	0 23,00
Mixed bor, short turn, ;	23.00 t	
Cast iron borings	22.00 t	
Shoveling turnings	26.00 t	
Clean cast, chem, borings, 2	27.00 t	
Low phos. 5 ft and under	18.00 t	0 49.00
Low phos. 2 ft punch'gs !	\$0.00 to	0 51.00
Elec. furnace bundles	18.00 t	
Heavy turnings	14.00 t	0 35.00
RR specialties	50.00 t	0 51,00
Rails, 18 in. and under (17,00 t	0 68,00
Cupola cast	12.00 t	0 43.00
Heavy breakable cast 4	6.00 t	0 47.00
Cast iron car wheels	60.00 to	51.00
Malleable	17.00 t	68,00
	54.00 t	55.00

Cincinnati

Brokers buying prices per gro	ss ton	on cars:
No. 1 hvy. melting	\$36.00	to \$37.00
No. 2 hvy. melting	30.00	to 31.00
No. 1 dealer bundles	36.00	to 37.00
No. 2 bundles	25.00	to 26.00
Machine shop turn	20.00	to 21.00
Shoveling turnings	22.00	to 23.00
Cast iron borings	20.00	to 21.00
Low phos. 18 in. and under	48,00	to 49.00
Rails, random length	54.00	to 55.00
Rails, 18 in. and under	62.00	to 63.00
No. 1 cupola cast	49.00	to 50.00
Hvy. breakable cast	44.00	to 45.00
Drop broken cast	59,00	to 60.00

Youngstown

No.	1	hvy.	me	Iting				\$45,50	to	\$46,50
No.	2	hvy.	me	lting				38,00	to	39.00
No.	1	deal	er	bund	le	8		46.50	to	47.50
No.	2	bune	lles					 29.00	to	30,00
Mac	hi	ne sh	op	turn.				 20.50	to	21.50
										26.50
Low	7 1	nnos.	pla	te				48.00	10	49 00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

Olevelana	
No. 1 hvy. melting\$42.00 to	\$43.00
No. 2 hvy. melting34.50 to	35.50
No. 1 dealer bundles 43.00 to	44.00
No. 1 factory bundles 45.50 to	46,50
No. 2 bundles 25.50 to	26,50
No. 1 busheling 43.00 to	44.00
Machine shop turn 18.00 to	
Mixed bor, and turn 23.00 to	24.00
	24.00
	24.00
	24.00
Cut structural & plates, 2	10 50
ft & under 48.50 to	49.50
Drop forge flashings 42.00 to	43.00
Low phos. punch'gs plate. 44.00 to	45.00
Foundry steel, 2 ft & under 42.00 to	43.00
No. 1 RR hvy. melting 45.50 to	46.50
Rails 2 It and under 65,00 to	66.00
Rails 18 in, and under 66.00 to	67.00
Steet axle turnings 24.00 to	25,00
Railroad cast 60.00 to	
No. 1 machinery cast 56.00 to	57.00
Stove plate 51.00 to	52.00
Malleable 67.00 to	68.00
Stainless	
18-8 bundles	225.00
18-8 turnings100,00 to	110.00
430 bundles	120.00
100 00110100 11	

Buffalo

Pullulu			
No. 1 hvy. melting	36,00	to	\$37.00
No. 2 hvy. melting	33,00	to	34.00
No. 1 busheling			
No. 1 dealer bundles			
No. 2 bundles		to	27.00
Machine shop turn		to	20.00
Mixed bor, and turn			
Shoveling turnings			
Cast iron borings			
Low phos. plate			
Structurals and plate,			
2 ft and under	44.00	to	45.00
Scrap rails, random lgth	42.00	to	
Rails 2 ft and under			
No. 1 machinery cast			
No. 1 cupola cast			

St. Louis

No. 1 hvy. melting	\$36.00	to	\$37.00
No. 2 hvy. melting	34,00	to	35,00
No. 1 dealer bundles	42.00	to	43.00
No. 2 bundles	25.00	to	26.00
Machine shop turn		to	20.00
Shoveling turnings			
Cast iron borings	24.00		25.00
No. 1 RR hvy, melting			45.00
Rails, random lengths	52,00		53.00
Rails, 18 in, and under			58.00
Angles and splice bars	50.00		51,00
RR specialties	49.00		50.00
Cupola cast	51.00		52.00
Heavy breakable cast	45.00		46.00
Stove plate	44.50		45.50
Cast iron car wheels	48,50		49.50
Rerolling rails			61.00
Unstripped motor blocks			46.00
cusurpped motor blocks	40.00	10	10.00

Birmingham

wit titting matti			
No. 1 hvy. melting	\$36.00	to	\$37.00
No. 2 hvy. melting	30,00	to	31.00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	24,00	to	25.00
No. 1 busheling	40.00	to	41.00
Machine shop turn	23.00	to	24.00
Shoveling turnings	25.00	to	26.00
Cast iron borings	14.00		15.00
Electric furnace bundles	40.00		41.00
Elec. furnace, 3 ft & under	38.00		39.00
Bar crops and plate	44.00		45.00
Structural and plate, 2 ft.	43.00	to	44.00
No. 1 RR hvy, melting	36.00	to	37.00
Scrap rails, random lgth	52,00	to	53.00
Rails, 18 in. and under	56.00		57.00
Angles and splice bars	49.00	to	50.00
Rerolling rails	61.00		62.00
No. 1 cupola cast	53.00		54.00
Stove plate	53.00		54.00
Cast iron car wheels	44.00		45.00
Unstripped motor blocks	42.00		43.00

New York

Brokers buying prices per gross ton on cars:
No. 1 hvy. melting \$33.00 to \$34.00
No. 2 hvy. melting 28.00 to 29.00
No. 2 dealer bundles 19.00 to 20.00
Machine shop turnings 10.00 to 11.00
Mixed bor. and turn 12.00 to 13.00
Shoveling turnings 15.00 to 16.00
Clean cast, chem. borings. 22.00 to 23.00
No. 1 machinery cast 39.00 to 40.00
Mixed yard cast 37.00 to 38.00
Heavy breakable cast 37.00 to 38.00
Stainless
18-8 prepared solids 200,00 to 205,00
18-8 turnings 85.00 to 90.00
430 prepared solids 85.00 to 90.00
430 turnings 20.00 to 25.00

Detroit

Brokers buying prices per gros	. ton	OF	cares
No. 1 hvy. melting\$			
No. 2 hvy. melting	25.00	to.	26.00
No. 1 dealer bundles			
No. 2 bundles	20.00	to	21.00
			37.00
	36.00	to	37.00
	16.00	to	17.00
Mixed bor, and turn	18.00	to	19.00
	18.00		19.00
Cast iron borings	21.00	to	22.00
	40.00		41.00
	46.00		47.00
	51.00	to	52.00
Stainless			A
18-8 bundles and solids. 2			
18-8 turnings	80.00	to	85.00
430 bundles and solids1	05.00	to	110.00

Boston

BOSTON	
Brokers buying prices per gro	
No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	34.00 to 35.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	
Machine shop turn	11.00 to 12.00
Shoveling turnings	15.00 to 16.00
Clean cast. chem. borings.	
No. 1 machinery cast	41.00 to 42.00
Mixed cupola cast	
Heavy breakable cast	

San Francisco

	\$40.00
	36.00
No. 1 dealer bundles	36.00
No. 2 bundles	22,00
Machine shop turn,\$17.00 to	19.00
Cast iron borings 17.00 to	19.00
No. 1 cupola cast,	47.00

Los Angeles

No. 1 hvy. melting	\$41.00
No. 2 hvy. melting	39.00
No. 1 dealer bundles	38.00
No. 2 bundles	20.00
Machine shop turn \$18.00 to	
Shoveling turnings 18,00 to	19.00
Cast iron borings 18.00 to	
Elec. furn. 1 ft and under	
(foundry) 49.00 to	50.00
No. 1 cupola cast 47.00 to	48.00

Seattle

No. 1	hvy. m	elting	×						\$35.00
No. 2	hvy. n	nelting						,	33.00
No. 2	bundle	S			×				22.00
	cupola								36.00
Mixed	yard	cast.	*	×	×	 -		*	36.00

Hamilton, Ont.

Brokers buying prices per gross to	n on cars
No. 1 hvy. melting	\$32.25
No. 2 hvy. melting	28.23
No. 1 dealer bundles	32.23
No. 2 bundles	24.00
Mixed steel scrap	24.25
Bush., new fact., prep'd	32.25
Bush., new fact., unprep'd	26.23
Machine shop turn	14.00
Short steel turn	
Mixed bor. and turn \$46.50	13.00 to 48.00

Houston

Brokers buying prices	per	gro	88	ton	on cars
No. 1 hvy. melting	****				\$34.00
No. 2 hvy. melting					31.00
No. 2 bundles					20.00
Machine shop turn.					16.00
Shoveling turnings					20.00
Cut structural plate					
2 ft & under		1	48	.00	to 49.00
Unstripped motor b					
Cupola cast					
Heavy breakable ca	st.		34	.00	to 35.00





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What to Expect In Copper

Fabricators' business will be about five pct better in 1960 than last year.

But big change: There'll be enough metal to go around. This will stabilize the price.

• Copper industry people pretty well agree fabricating business this year will be up about five pct.

Considering that business in 1959 topped 1958 by 20 pet overall, this is a bright outlook.

Statistics at Work—Mine output will come close to 1.16 million tons, estimates the Copper and Brass Research Assn. And refinery production will be about 1.5 million tons. Neither of these can be compared with 1959 since both mine and refinery output was at record levels in the first half, then 73 pct and 68 pct respectively struck in the last half.

But these statistics don't tell where to look for the really important developments in copper this year.

In Good Supply—Most important
—There'll be enough metal to go
around. Hedging prevented most
users from being hurt seriously by
the strikes. But pipelines are empty.
While they are filling up, schedules
may be a bit uncomfortable. But
this will start easing by the second
quarter.

Stemming directly from this, the price of producers' copper has rarely looked this stable. There are no specific threats of any likely increase. When pipelines are full again the market will soften some,

and the price might even drop slightly.

Market Minded—In an important development, six major copper producers—American Metal Climax Inc., American Smelting and Refining Co., Anaconda Co., International Nickel Co., Kennecott Copper Corp., and Phelps Dodge Corp., have formed the Copper Products Development Assn.

It is the latest sign that the copper industry is becoming marketing minded. The new association will feature a market development committee to advise the technical people on the practicality of projects, and to decide how to best use technical advances and new products. The new group will listen to anyone with any ideas for any new copper products.

Service Promised—The word on the bountiful copper supply comes right from the top. Anaconda's chairman, Clyde E. Weed believes the industry is in "a better position to serve its customers than ever before in history."

How important is adequate supply to the industry?

Says one spokesman, "Our men have a dual selling problem. They must not only sell copper for its intrinsic value, but its value plus the reassurance that it will continue to be in totally adequate supply for the future."

Market Outlook—Major markets in 1960, as in other years will be automotive and construction.

Cabra estimates 6.5 million autos will be made in 1960. William

Meissner, director of the Copper Div., Business and Defense Services Administration, figures 6.7 million. Cabra figures "the average car consumes 35 to 40 lb of copper metals, exclusive of accessories."

Better than 1959—T. E. Veltfort, managing director of Cabra, reports that while tight money has somewhat restricted housing starts, the figure should hit 1.1 to 1.2 million this year. Mr. Meissner leans toward the high side in his estimate. Mr. Veltfort figures "a high percentage of these" will use to 250 lb of copper tube for plumbing.

The whole thing adds up to about two billion lb of brass mill products shipped this year. This would top 1959 by 100 million lb, and 1958 by 500 million lb.

Tin prices for the week: Dec. 30 —98.875; Dec. 31—98.875; Jan. 1 —holiday; Jan. 4—99.375; Jan. 5 —99.375.* *Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in DECEMBER based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley-	33.00
Copper, Lake	33.00
Straits Tin, New York-	99.14
Zinc, E. St. Louis	12.50
Lead, St. Louis-	12.32
Aluminum innot-	27 39

Note: Quotations are on going prices

Primary Prices

(cents per th)	current price	last price	date of change
Aluminum pip	26.00	24.70	12/17/59
Aluminum Inget	28.10	26.80	12/17/59
Copper (E)	33.00	30-33	11/12/50
Copper (CS)	35.00	33.00	12/23/59
Copper (L)	33.00	31.50	11/6/59
Lead, St. L	11.80	12.30	12/21/59
Lead, N. Y.	12.00	12.50	12/21/59
Magnesium Inget	38.00	34.50	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nicket	74.00	84.50	12/6/58
Titanium spenge	150-160	162-182	8/1/59
Zinc, E. St. L.	12.50	12.5-13	11/2/59
Zinc, N. Y.	13.00	13-13.8	11/2/59

ALUMINUM: 99% Ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 382.



"I never knew BRISTOL BRASS makes phosphor bronze, too"

This chance remark gave us a feeling that we may have been keeping a secret unintentionally. So for the public record: Bristol makes *everything* that can be made from copper, and makes it in that special way called "Bristol-Fashion" . . . *including phosphor bronze that nobody can top*.

In fact, our customers tell us that Bristol Phosphor Bronze is consistently dependable in its surface smoothness and hardness . . . in its resistance to fatigue and corrosion . . . and in its excellent behavior under forming and machining. They don't tell us in those exact words, but in the form of repeat orders, year after year.

Yes, Bristol makes phosphor bronze strip in all standard sizes. How are you fixed? Write, or phone Bristol, Connecticut, Ludlow 2-3161.

THE BRISTOL BRASS CORPORATION

Bristol, Conn. (since 1850). Offices or warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse and for brass forgings, too Accurate Brass Corp. (Subsidiary of The Bristol Brass Corp.), Bristol, Connecticut.

"Bristol-Tashion" means Brass at its Best

NONFERROUS PRICES

MILL PRODUCTS

(Cents per 1b unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b, customer's plant)

Flat Sheet (Mill Finish and Plate) ("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	250-
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock-2011-T-3

Size"	34	36-36	3/4-1	134-134	
Price	62.0	61.2	59.7	57.3	

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed) Sheet and Plate

Type ↓	${\rm Gage}{\rightarrow}$.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Star Grade	nd,		67.9	69.0	77.9	103.1
AZ31B Spe	· · · · · · · · · · · · · · · · · · ·	11/11/	93.3	96.9	108.7	171.3
Tread Plate			70.6	71.7		
Tooling Pla	ite	73.0				7.1116

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec, Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZMIB The C	asting)			34,25	(delivere	(I)
AZ63A, AZ92A	AZ91C	Sand (asting)	40.75	Velasco,	Tex.

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

".A	" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	8.9	109
Plates, HR	130	110	126
Seamless tube .		129	200
Shot, blocks	* * *	87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Capper	57.13		54.86	58.32
Bram, Yellow	50.57	50.86	50.26	54.23
Bram, Low	\$3.58	53.82	53.22	57.09
Brass, R L	54.58	54.87	54.27	58.14
Bram, Naval	55.12		48.68	58.78
Munts Metal	53.20		48.26	
Comm. Bs.	56.17	56.46	55.86	59.48
Mang. Bs.	58.86		52.21	
Phoe. Bs. 5%	77.44		78.19	

Free Cutting Brase Rod 36.06

TITANIUM

(Base prices f.o.b. mill)

(Base prices f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00. Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00. Wire, rolled and/or drawn, commercially pure, \$5.55-\$6.05; alloy, \$7.55-\$9.50; Bar, HR or forged, commercially pure, \$4.00-\$4.50; alloy, \$4.00-\$6.25; billets, HR, commercially pure, \$3.20-\$3.70; alloy, \$3.20-\$4.75.

PRIMARY METAL

(Course ber so minera criter mac mores)
Antimony, American, Laredo, Tex 29.50
Beryllium Aluminum 5% Be, Dollar
per lb contained Be\$74.75
Beryllium copper, per lb conta'd Be.\$43.00
Beryllium 97% lump or beads.
f.o.b. Cleveland, Reading \$71.50
Bismuth, ton lots\$ 2.25
Cadmium, del'd\$ 1.40
Calcium, 99.9% small lots\$ 4.55
Chromium, 99.8% metallic base\$ 1.31

REMELTED METALS

Brass Ingot | Delivered, carloads)

(Cenu	s per	- 61	0	6	2.0	2.0	63	124	57	6	16	ι,		C	u:	r.	B C	P (C	и	L?	εJ	,		
85-5-5	ingo	t																						
No.	115					*				*					,	×	*				*	*	*	30.7
No.	120			×			×	*	×	×		×	×	>	*	*		×	×	*		*	*	29.2
No.																×	*				*	*	*	28.7
80-10-	10 in	go	30																					
No.																×	á	*	×				×	35.2
No.	315								16		*					*				8	×	×		33.0
88-10-	2 ing																							
No.	210			*			*	*	*		×		*				×	*				×		44.0
No.	215				×							,	*		,			×					*	40.7
	245	* 1																				×		36.0
Yellow	inge	ot																						
No.	405				*			*	×	*							*	*	×			×		24.7
Manga	nese	b	T	0	n	Z(е																	
No.	421									,					×		*			*		*		29.2

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

Ap-p stinilling			
0.30 copper			
0.60 copper			
Piston alloys	(No. 132	type).	.28.00-29.00
No. 12 alum.			
108 alloy			. 25.25-25.7
195 alloy			
13 alloy (0.6			
AVE 670 (1 :	not minol		95 00 96 04

Steel deaxidizing aluminum notch bar

granuic	ited or snot							
Grade	1-95-97 1/4 %	,			 		.25.25-26.25	
Grade	2-92-95%						.24.00-25.00	
Grade	3-90-92%			*	* *	 *	.23.00-24.00	
Grade	4-85-900				 		. 22.50-23.50	

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for ship-ments of 20,000 lb and over)

	1	Heavy	Turnings
Copper		29	28 14
Yellow brass		2234	20 1/4
Red brass		25%	25
Comm. bronze		26%	26
Mang. bronze		20%	20
Free cutting rod end	8.	21 34	

Customs Smelters Scrap (Cents per pound carload lots, delivered

to refinery)	
No. 1 copper wire	29 1/2
No. 2 copper wire	26
Light copper	23 %
*Refinery brass	24%
*Dry copper content.	23 1/4

ingot Makers Scrap (Cents per pound carload lots, delivered

No. 1 copper wire	29 1/2
No. 2 copper wire	
Light copper	23 1/4
No. 1 composition	
No. 1 comp. turnings	
Hvy. yellow brass soli	
Brass pipe	
Radiators	18
Alumin	num
Milwad ald anat	14 15

Mixed old cast. 14 -15 Mixed new clips 16½-17 Mixed turnings, dry 14½-15½

Dealers' Scrap (Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 copper wire 251/2-	
No. 2 copper wire 221/2-	
Light copper 21 -	21 1/2
Auto radiators (unsweated). 141/2-	15
No. 1 composition 18½-	19
No. 1 composition turnings 17 -	17%
Cocks and faucets 15 -	15 1/2
Clean heavy yellow brass 13 -	131/2
Brass pipe 15 -	15 1/2
New soft brass clippings 15 1/4-	
No. 1 brass rod turnings 121/2-	13

Aluminum Alum. pistons and struts ... $7\frac{1}{2}$ — 8 Aluminum crankcase ... $11\frac{1}{2}$ — $11\frac{1}{2}$ — 11 0 (2s) aluminum clippings 15 — $15\frac{1}{2}$ 0 Old sheet and utensils ... $11\frac{1}{2}$ — $11\frac{1}{2}$

Borings and turnings 7 - 71/	ė
Industrial castings 11 14-11 %	i
2020 (24S) clippings 121/2-13	
Zinc	
New zinc clippings 61/4 6%	i
Old zinc 414-414	
Zinc routings 3 31/4	į.

Old die cast scrap	21/2- 21/4
Nickel and Monel	
Pure nickel clippings	52-54
Clean nickel turnings	40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32

Old sheet Monel	26-28 18 15
Lead Soft scrap lead Battery plates (dry)	8¾ — 9¼ 4¼ — 4¼
Batteries, acid free Miscellaneous	21/2- 2%

White Property	200		-		4.4		*	 	-		7	 -	100		- 19
Misce	llan	eous													
Block															
No. 1	pew	ter							,	*		 59		-6	0
Auto															
Mixed															
Solder															
Siphor															2
Small	fou	ndry	7	t;	yp	e			×			 10	1/4-	-1	0 %
Monot	ype								*			 10	1/4.	-1	0 %

IR	ON AGE		Italica iden	tify produce	rs listed in	key at end of	table. Base	prices, f.o.b.	mill, in cents	per lb., unless of	therwise note	ed. Extras	apply.	
5	TEEL		rs, bloc Slabs	OMS,	PIL- ING		SHAPES UCTUR				STRI	P		
P	RICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
-	Bothlohom, Pa.			\$119.00 B3		5.55 B3	8.10 B3	5.55 B5						
	Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3, B3	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3	7.425 S10, R7	7.575 B3			
-	Phila., Pa.									7.875 P15				
-	Harrison, N. J.													15.55 CI
-	Conshohocken, Pa.		\$104.50 .42	\$126.00 //2					5.15 A2		7.575 A2			
1	New Bedford, Mass.									7.875 R6				
1	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		\$.55 B3	8.10 B3							
EAST	Boston, Mass.									7.975 T8				
m	New Haven, Conn.									7.875 DI				
	Baltimere, Md.									7.425 T8				15.90 T8
	Phoenizville, Pa.					5.55 P2		5.55 P2						
	Sparrows Pt., Md.								5.10 B3		7.575 B3			
,	New Britain, Bridgoport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7,				15.90 N7 15.70 T8
-	Alton, III.								5.30 L1					
-	Ashland, Ky.					-		-	5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3 \$114.00 T3						7.425 G4		10.80 G#		
	Chicago, Franklin Park, Evanston, Ill.	\$80.00 UI, R3	\$99.50 UI, R3,W8	\$119.00 UI R3,W8	6.50 UI	5.50 U1, W8,P13	8.05 UI, YI,W8	5.50 UI	\$.10 W8, N4,AI	7.525 <i>A1</i> , T8, M8	7.575 W8		8.40 W8, S9,13	15.55 A S9,G4,
	Cleveland, Ohio									7.425 A5, J3		10.75 A5	8.40 /3	
	Detroit, Mich.			\$119.00 R	5				5.10 G3, M2	7.425 M2, SI, DI, PII	7.575 G3	10.80 SI		
	Anderson, Ind.	-								7.425 G4				
E WEST	Gary, Ind. Harbor, Indiana	\$80.00 UI	\$99.50 UI	\$119.00 UI		5.50 UI, 13	8.05 UI, J3	5.50 /3	5.10 UI, 13, YI	7.425 YI	7.575 UI, 13, Y1	10.90 Y/	8.40 U1, Y1	-
MIDDL	Sterling, III.	\$80.00 N4				5.50 N4	7.75 N4	5.50 N4	5.20 N4					
M	Indianapolis, Ind.									7.575 R5				15.70 R
	Newport, Ky.								5.10 A9				8.40 /19	
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 SI; CIO	\$119.00 C10,S1					5.10 R3, SI	7.425 R3, T4,S1	7.575 R3, Si	10.80 R3, SI	8.40 SI	15.55 S
	Owensbore, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G										
	Pittsburgh, Midland, Butler, Aliquippa, McKeaspert, Pa.	\$80.86 UI, P6	\$99.50 UI. CII,P6	\$119.00 U CII,B7	6.50 UI	5.50 UI, J3	8.05 U1, J3	5.50 UI	5.10 P6	7.425 J3,B4 7.525 E3			8.40 59	15.55 \$
	Weirton, Wheeling, Follanshee, W. Va.				6.50 UI,	5.50 H/3		5.50 W3	5.10 W3	7.425 W5	7.575 W3	10.86 P/3		
	Youngstown, Ohio	\$80.00 R3	\$99.50 YI,	\$119.00 7			8.05 Y1		5. 10 U	7.425 YI,R	7.575 UI, YI	10.95 Y/	8.49 UI, YI	15.55 R
-	Fontana, Cal.	190.50 KI		\$148.00 K	1	6.30 K/	8.85 K1	6.45 K1	5.825 K1	9.20 K1				
	Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7							
1	Kansas City, Mo.					5.60 S2	8.15 S2						8.65 S2	
-	Los Angeles, Torranco, Cal.		\$109.00 B	\$139.00 E	12	6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 C1,R5			9.60 B2	17.75 J
WEST	Minnequa, Colo.					5.80 C6			6.20 C6	9.375 C6				
1	Portland, Ore.					6.25 02								
	San Francisco, Niles Pittaburg, Cal.	1,	\$109.00 B.	2		6.15 B2	8.70 B2		5.85 C7, B2					
	Seattle, Wash.		\$109.00 B	2		6.25 B2	8.80 B2		6.10 B2					
-	Atlanta, Ga.					5.70 48			5.10 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 72	\$99.50 72			5.50 T2 R3,C16	8.05 T2		5.10 T2, R3,C/6		7.575 T2			
S	Houston, Lone Star Texas		\$104.50 SZ	\$124.00 S	2	5.60 S2	8.15 S2						8.65 S2	

										1		1	
	STEEL				SHE	ETS				WIRE ROD	TINPI	LATE†	
P	RICES	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Hollowar Enamelia 29 ga.
1	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coa deduct 35¢ fr	ted mfg. terne rom 1.25-lb.	
1	Claymont, Del.										th./0.25 lb. a	x price, 0.75 dd 55¢.	
	Coatesville, Pa.										Can-makir BLACKPLAT	ng quality	
	Conshohocken, Pa.	5.15 A2	6.325 //2				7.575 A2				lb. deduct \$2 1.25 lb. coke	1.20 from	
	Harrisburg, Pa.										* COKES:		
-	Hartford, Conn.										**ELECTRO	: 0.50-lb. add add 65¢; 1.00-	
EAST	Johnstown, Pa.									6.40 B3	lb. add \$1.00 1.00 lb./0.25	. Differential	
	Fairless, Pa.	5.15 UI	6.325 UI				7.575 UI	9.325 UI			\$10.5e UI	\$9.20 U/	
-	New Haven, Conn.										710.00	43.20 07	
1	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3	
	Worcester, Mass.									6.70 A5			
	Trenton, N. J.		-	-									
-	Alton, III.									6.60 L1			
1	Ashland, Ky.	5.10 47		6.875 A7	6.775 A7		7.525 A7						
-	Canton-Massillon.			6.875 RI,			1.000 /1/						
1	Dover, Ohio Chicago, Joliet, III.	5.10 W8,		R3			7.525 UI,			6.40 A5,			
		AI					W8			R3,W8			
	Sterling, Ill.									6.50 N4, K2			
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3°	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5			
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3					
	Newport, Ky.	5.10 49	6.275 49										
WEST	Gary, Ind. Harber, Indiana	5.10 UI, 13, YI	6.27\$ U1, 13, Y1	6.875 UI, 13	6.775 U1, 13, Y1	7.225 UI	7.525 UI, YI,I3	9.275 UI, YI		6.40 Y/	\$10.40 UI, YI	\$9.10 <i>13</i> , <i>UI</i> , <i>YI</i>	7.85 UI, YI
	Granite City, III.	5.20 G2	6.375 G2	6.975 G2								\$9.20 G2	7.95 G2
MIDDLE	Kokomo, Ind.			6.975 C9						6.50 C9			
2	Manafield, Ohio	5.10 E2	6.275 E2			7.225 E2		_,		-			
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 SI	7.225 SI*, R3	7.525 R3, SI	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 U1, J3,P6	6.275 UI, J3,P6	6.875 UI, J3 7.50 E3*	6.775 UI		7.525 UI, J3	9.275 UI, J3	10.025 UI. J3	6.48 A5, J3,P6	\$10.40 UI, J3	\$9.10 UI, J3	7.85 UI, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7			
	Weirton, Wheeling, Follanabee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5		7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5
	Youngstown, Ohio	5.10 UI, YI	6.275 YI	7.50 W3* 7.50 J3*	6.775 YI		7.525 Y/	9.275 YI	-	6.40 YI			
-	Fontana, Cal.	5.825 K1	7.40 K1			-	8.25 KI	10.40 K7	-	-	\$11.05 K/	\$9.75 K/	
	Geneva, Utah	5.20 C7	-						-				
·	Kansas City, Mo.	-		-	-	-			-	6,65 S2			
WEST	Los Angeles, Torrance, Cal.									7.20 B2			
	Minnequa, Colo.		-		-	-	-			6.65 C6	-		
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7	
-	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2. R3	6.875 T2, R3	6.775 T2					6.40 T2,R3	\$10.50 T2	\$9.20 T2	

^{*} Electrogalvanized sheets.

	STEEL			BAI	RS				PLAT	TES		WIRE
	RICES	Carbon† Steel	Reinforc-	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr'a Bright
	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
1	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 W6
1	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4	
1	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
1	Conshohocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
EAST	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
E	Fairless, Pa.	5.825 UI	5.825 UI		6.875 UI							
	Newark, Camdan, N. J.			8.10 W10. P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10 8.15 J3	6.80 N8	9.175 N8						
1	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
1	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 B5, C14		9.325 A5,B5						8.30 A5, W6
1	Spring City, Pa.			8.10 K4		9.20 K4						
-	Alton, III.	5.075 <i>LI</i>										8.20 L1
	Ashland, Newport, Ky.							5.30 A7, A9		7.50 //9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15° R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5		5.30 E2				
	Chicago, Jeliet, Waukogan,	5.675 U1, R3, W8,N4,P13	5.675 U1, R3, N4, P13, W8	7.65 A5, W10,W8,	6.725 UI,R3, W8	9.025 A5. W10,W8,	8.30 UI,W8, R3	S.30 UI.AI, W8,I3	6.375 UI	7.50 UI, W8	7.95 UI. W8	8.00 A5,R W8,N4, K2,W7
	Madison, Harvey, Ill.	5.675 R3	5.875 <i>L1</i> 5.675 <i>R3</i>	85, £2,N9 7.6\$ A5,C13,		9.025 A5,	8.30 R3	5.30 R3, J3	6.375 J3		7.95 R3, J3	8.00 /15,
	Elyria, Obio Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3	6.725 R5,G3	9.025 R5	8.30 G3	5.30 G3		7.50 G3	7.95 G3	C13,C18
	Detroit, MICIL	3.013 (3)	2.013 (3)	7.85 P8.B5 7.65 R5	6.123 10,03	9.225 B5,P3, P8	0.30 0.5	43007			2.33 07	
	Duluth, Minn.											8.00 A5
WEST	Gary, Ind. Harber, Crawfordsville, Hammond, Ind.	5.675 U1,13, Y1	\$ 675 U1,13, Y1	7.65 R3,J3	6.725 U1,13, Y1	9.025 R3,M4	8.30 UI, YI	5.30 U1,13, Y1	6.375 J3.	7.50 UI, YI	7.95 U1, Y1,13	8.10 M4
MIDDLE	Granite City, III.							5.40 G2				
MID	Kokomo, Ind.		5.775 C9									8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4					5.30 N4				8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10,	9.025 C10		5.30 R3,SI		7.50 SI	7.95 R3, SI	
	Owenshore, Ky.	5.675 G5			6.725 G5							-
	Pittsburgh, Midland, Donera, Aliquippa, Pa.	5.675 U1, J3	5.675 U1.J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 UI, J3, CII, B7	9.825 A5, W10,R3,S9, C11,C8,M9	8.30 U1, J3	5.30 U1.J3	6.375 UI, J3	7.50 UI, J3,B7	7.95 UI. J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio					-					-	8.00 P7
	Weirton, Wheeling,							5.30 W5				
	Follansbee, W. Va. Youngstown, Ohio	5.675 UI, R3		7.65 AI, YI,	6.725 UI, YI	9.025 Y1,F2	8.30 UI, YI	5.30 UI,		7.50 Y/	7.95 UI, YI	8.00 Y/
_	Emeryville,	6 425 15	F 425 15	F2	7.775 <i>K1</i>		9.00 K1	6.10 KI		8.30 K/	8.75 K1	-
	Fontana, Cal.	6.425 <i>J</i> 5 6.375 <i>KI</i>	6.425 JS 6.375 KI			-				0.00 1.1	8.75 K1	
	Geneva, Utah	Faar Ca	F.005 CO		CARE CA		A FF. C3	5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2	0 10 B1 D1	6.975 S2	11 00 014	9.00 B2					8.25 S2
WEST	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S/2	1.113 82	11.00 P14, S12	3.00 82					8.95 B2
*	Minnequa, Colo.	6.125 C6	6.125 C6					6.15 C6				8.25 C6
	Portland, Ore.	6.425 02	6.425 02							-		
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				9.05 B2					8.95 C7,C
	Seattle, Wash.	6.425 B2,No	6.425 B2,A1	0			9.05 B2	6.20 52		8.40 B2	8.85 B2	
	Atlanta, Ga.	5.875 //8	5.675 A8									8.00 48
SOUTH	Fairfield City, Ala. Birmingham, Ala.	5.675 T2,R3 C/6	5.675 T2,R3, C/6	8.25 C/6			8.30 T2	5.30 T2,R3			7.95 T2	8.00 T2, F
S	Houston, Ft. Worth,	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 S2		7.60 S2	8.85 S2	8.25 S2

[†] Merchant Quality-Special Quality 35¢ higher. (Effective Jan. 4, 1960)

STEEL PRICES

Key to Steel Producers

With Principal Offices

- Al Acme Steel Co., Chicago
- Alan Wood Steel Co., Conshohocken, Pa. Allegheny Ludlum Steel Corp., Pittsburgh
- American Cladmetals Co., Carnegie, Pa. 44
- A5 American Steel & Wire Div., Cleveland Angel Nail & Chaplet Co. Cleveland 46
- 17 Armco Steel Corp., Middletown, Ohio
- AB Atlantic Steel Co., Atlanta, Ca.
- A9 Acme-Newport Steel Co., Newport, Ky.
- A10 Alaska Steel Mills, Inc., Seattle, Wash. B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Steel Co., Pacific Coast Div.
- B3 Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- B5 Bliss & Laughlin, Inc., Harvey, Ill.
- B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
- B7 A. M. Byers, Pittsburgh
- B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
- CI Calstrip Steel Corp., Los Angeles
- Carpenter Steel Co., Reading, Pa. C4 Claymont Products Dept., Claymont, Del.
- C6 Colorado Fuel & Iron Corp., Denver
- C7 Columbia Geneva Steel Div., San Francisco C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Pittsburgh, Pa.
- CII Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland
- C14 Compressed Steel Shafting Co., Readville, Masa
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connors Steel Div., Birmingham
- C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- DI Detroit Steel Corp., Detroit
- D2 Driver, Wilbur B., Co., Newark, N. J.
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- El Eastern Stainless Steel Corp., Baltimore
- Empire-Reeves Steel Corp., Mansfield, O.
- E3 Enamel Products & Plating Co., McKeesport, Pa.
- F1 Firth Sterling, Inc., McKeesport, Pa.
- F2 Fitzsimons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G2 Granite City Steel Co., Granite City, Ill.
- 63 Great Lakes Steel Corp., Detroit
- G# Greer Steel Co., Dover, O.
- 65 Green River Steel Corp., Owenboro, Ky.
- HI Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., New Castle, Ind.
- 13 Inland Steel Co., Chicago, Ill.
- 14 Interlake Iron Corp., Cleveland
- JI Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa. 13 Jones & Laughlin Steel Corp., Pittsburgh
- J4 Joslyn Mfg. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.
- KI Kaiser Steel Corp., Fontana, Calif.
- K2 Keystone Steel & Wire Co., Peoria
- K4 Keystone Drawn Steel Co., Spring City, Pa.
- LI Laclede Steel Co., St. Louis
- L? La Salle Steel Co., Chicago
- 63 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coetesville, Pa.
- MI Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mig. Co., Sharon, Pa.
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- M8 Mill Strip Products Co., Chicago, Ill.
- M9 Moltrup Steel Products Co., Beaver Falls, Pa.
- NI National Supply Co., Pittaburgh
- N2 National Tube Div., Pittsburgh
- N# Northwestern Steel & Wire Co., Sterling, Ill.
- No Northwest Steel Rolling Mills, Seattle N7 Newman Crosby Steel Co., Pawtucket, R. 1.
- N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
- M9 Nelson Steel & Wire Co.
- 01 Oliver Iron & Steel Co., Pittsburgh
- 02 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Steel Corp., Phoenixville, Pa.
 P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit
 P8 Plymouth Steel Co., Detroit
- Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.

- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Joliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- RI Reeves Steel & Mig. Div., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
 R3 Republic Steel Corp., Cleveland
- R4 Roebling Sons Co., John A., Trenton, N. J. R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome. N. Y.
- SI Sharon Steel Corp., Sharon Pa.
- S2 Sheffield Steel Div., Kansas City
- St. Shenango Furnace Co. Pittsburgh
- 54 Simonds Saw and Steel Co., Fitchburg, Mass.
- \$5 Sweet's Steel Co., Williamsport, Pa.
- S7 Stanley Works, New Britain, Conn.
- S8 Superior Drawn Steel Co., Monaca, Pa. S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
- \$10 Seneca Steel Service, Buffalo
- SII Southern Electric Steel Co., Birmingham S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
- \$13 Seymour Mfg. Co., Seymour, Conn.
- \$14 Screw and Bolt Corp. of America, Pittsburgh, Pa.
- 71 Tonawanda Iron Div., N. Tonawanda, N. Y.
- 72 Tennessee Coal & Iron Div., Fairfield
- 73 Tennessee Products & Chem. Corp., Nashville
- 74 Thomas Strip Div., Warren, O.
- 75 Timken Steel & Tube Div., Canton, O.
- 77 Texas Steel Co., Fort Worth 78 Thompson Wire Co., Boston
- UI United States Steel Corp., Pittsburgh
- U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
- U3 Ulbrich Stainless Steels, Wallingford, Conn.
- U4 U. S. Pipe & Foundry Co., Birmingham
- WI Wallingford Steel Co., Wallingford, Conn.
- W2 Washington Steel Corp., Washington, Pa. W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo W7 Wilson Steel & Wire Co., Chicago.
- W8 Wisconsin Steel Div., S. Chicago, III. W9 Woodward Iron Co., Woodward, Ala.
- W16 Wyckoff Steel Co., Pittsburgh
- W12 Wallace Barnes Steel Div., Bristol, Conn. YI Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per net tan.

1/2 1	n.	3/4 1	- 1			-															
mu			n.	11	n.	11/4	ln.	11/2	In.	2 1	n.	21/2-1	In.	2	ln.	21/2	In.	31	in.	31/4	4 In.
Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Bik.	Gal.	Bik.	Gal.	Blk.	Gal.
2.25	*13.0	3.25 5.25	*9.0	6.75 8.75	*6.50 *4.50	9.25 11.25	*5.75 *3.75	9.75 11.75	*2.75	12.25	*2.25	13.75	+2.50								
0.25	*13.0 *15.0	5.25	*9.0 *11.0	8.75 6.75	*4.50 *6.50	*1.75 11.25 9.25	*16.75 *3.75 *5.75	*1.25 11.75 9.75	*2.75 *4.75	12.25	*2.25 *4.25	13.75 11.75	*2.50 *4.50							+1.75	*18.50
0.25	*15.0 *13.0	3.25 5.25	*11.0	6.75 8.75	*6.50 *4.50	9.25 11.25	*5.75 *5.75	9.75 11.75	*4.75 *2.75		*4.25 *2.25	11.75 13.75	*4.50 *2.50			+5.75	+22.50	+3.25	*20.0	+1.75	*18.50
2.25	*13.0 *13.0	5.25 5.25	*9.0	8.75	*4.50 *4.50	11.25	*3.75 *3.75	11.75	*2.75 *2.75	12.25	*2.25 *2.25	13.75 13.75	*2.50 *2.50			+5.75	+22.50	*3.25	+20.0		+18.58
						11.25	*3.75														*18.50
4.75	*9.0				*0.50	12.25	*1.75	12.75													
4.75	*9.0	8.75 *2.25	*5.8	11.75	*0.50	12.25	*1.75	12.75		13.25		13.75	*1.50								
6.75 4.75 6.75	*7.0 *9.0 *7.0	10.75 8.75 10.75	*3.0 *5.0 *3.0	11.75	1.50 *0.50 1.50	14.25 12.25 14.25	0.25 *1.75 0.25	14.75 12.75 14.75		13.25		13.75	+1.50							4.25	*11.50
6.75	*7.0 *7.0	10.75	*3.0 *3.0	13.75	1.50	14.25	0.25	14.75 14.75	1.25	15.25	1.75	15.75 15.75	0.50	*10.7							*11.50
6.75	*7.0 *8.0	19.75	*3.0 *4.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75 14.75	*0.50		+24.75			*0.75	+16.50	*****	*11.50
1	0.25 2.25 0.75 0.25 2.25 2.25 2.25 2.25 2.25 1.25 2.25 4.75 6.75 4.75 6.75 6.75 6.75 6.75	0. 25 *15.0 0. 75 *26.00 0. 75 *26.00 0. 25 *15.0 0. 25 *15.0 0. 25 *15.0 0. 25 *15.0 0. 25 *15.0 0. 25 *13.0 0.	0. 25	0.25 *15.0 3.25 *11.0 2.25 *10.0 75 *22.00 *2.75 *22.00 *2.75 *22.00 *2.75 *22.00 *2.75 *22.00 *2.55 *10.0 3.25 *11.0 2.25 *10.0 3.25 *11.0 \$ 2.25 *13.0 5.25 *9.0 \$ 2.25 *15.0 3.25 *11.0 \$ 2.25 *13.0 5.25 *9.0 \$ 2.25 *13.0 5.25 *	0. 25 *15.0 3. 25 *11.0 6.75 0. 75 *26.00 *7.75 *22.00 *4.25 0. 25 *15.0 3. 25 *11.0 6.75 0. 25 *15.0 3. 25 *10.0 8.75 2. 25 *13.0 5. 25 *9.0 8.75 4. 75 *9.0 8.75 *5.0 11.75 6. 75 *7.0 10.75 *3.0 13.75 6. 75 *7.0 10.75 *3.0 1	0 .25 *15.0 3 .25 *11.0 6.75 *6.50 0.75 *26.00 *7.75 *22.00 *4.25 *17.50 0.75 *26.00 *7.75 *22.00 *4.25 *17.50 0.25 *15.0 3.25 *11.0 6.75 *6.50 0.25 *15.0 3.25 *10.0 6.75 *6.50 0.25 *15.0 3.25 *10.0 6.75 *6.50 0.25 *15.0 3.25 *10.0 6.75 *6.50 0.25 *13.0 5.25 *9.0 8.75 *4.50 0.25 *13.0 5.25 *10.0 7.75 *4.50 0.25 *13.0 5.25 *10.0 7.75 *4.50 0.25 *13.0 5.25 *10.0 7.75 *1.50 0.25 *13.0 5.25 *10.0 7.75 *1.50 0.25 *13.0 5.25 *10.0 7.75 *1.50 0.25 *10.0 7.75 *1.0 7.75 *1.0 7.75 *1.0 7.75 *1.50 0.25 *10.0 7.75 *1.0 7.7	0. 25 * 15.0 3. 25 * 11.0 6. 75 * 6.50 9. 25 2. 25 * 13.0 5. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 15.0 5. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 4.50 11.25 0. 25 * 9.0 8. 75 * 9.0 9. 25 *	0. 25 *15.0 3.25 *11.0 6.75 *6.50 9.25 *5.78 0. 75 *26.00 *7.75 *22.00 *4.25 *17.50 *1.1.25 *3.75 0. 25 *15.0 3.25 *11.0 6.75 *6.50 9.25 *5.75 0. 25 *13.0 5.25 *9.0 8.75 *4.50 11.25 *3.75 0. 25 *1.75 *0.50 12.25 *1.75 0. 25 *1.75 *1.05 *1.05 *1.05 *1.05 *1.25 *0.25 0. 25 *1.75 *1.05 *1.05 *1.05 *1.05 *1.05 *1.25 *0.25 0. 25 *1.75 *1.05	0. 25 *15.0	0. 25 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.78 9. 76 *4.75 0. 75 *26.00 *7.75 *22.00 *4.25 *17.50 *1.75 *16.75 *2.75 0. 25 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *3.75 11.75 *2.75 0. 26 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.75 9. 75 *4.75 0. 26 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.75 9. 75 *4.75 0. 26 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.75 9. 75 *4.75 0. 26 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.75 9. 75 *4.75 0. 26 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5.75 9. 75 *4.75 0. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 2. 25 *13.0 5. 25 *9.0 8. 75 *4.50 11.25 *3.75 11.75 *2.75 4. 75 *9.0 8. 75 *5.0 11.75 *0.50 12. 25 *1.75 12.75 *0.75 4. 75 *9.0 8. 75 *5.0 11.75 *0.50 12. 25 *1.75 12. 75 *0.75 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1.25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6. 75 *7.0 10. 75 *3.0 13. 75 1.50 14. 25 0. 25 14. 75 1. 25 6.	0. 25 * 15.0 3. 25 * 11.0 6. 75 * 46. 50 9. 25 * 5. 78 9. 78 * 4. 75 10. 25 2. 25 * 13.0 5. 25 * 9.0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 27. 75 12. 25 2. 25 * 15. 0 5. 25 * 9.0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 27. 75 12. 25 12. 25 * 15. 0 5 * 25 * 15. 0 5 * 25 * 15. 0 5 * 25 * 25 * 25 * 25 * 25 * 25 * 25	0. 25 * 15.0 0 3. 25 * 11.0 0 6. 75 * 6. 50 9. 25 * 5. 78 9. 78 * 4. 75 10. 25 * 4. 25 0. 25 * 12. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 13.0 5. 25 * 10. 0 6. 75 * 6. 50 9. 25 * 5. 78 9. 78 * 4. 75 10. 25 * 4. 25 0. 25 * 14. 75 10. 25 * 12. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13.0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 22. 25 * 22. 25 * 13. 0 5. 25 * 9. 0 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 2. 75 12. 25 * 2	0. 25 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5. 76 9. 75 *4.75 10. 25 *4.25 11.75 (2.75 *6.50 *7.5 *6	0. 25 * 15.0	0. 25 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5. 78 9. 78 *4. 75 10. 25 *4. 25 11. 75 *4. 50 0. 75 *25. 60 *7. 75 *22. 00 *4. 25 *17. 50 *11. 25 *3. 75 *11. 75 *2. 75 12. 25 *2. 25 13. 75 *2. 50 0. 25 *15. 75 *2. 50 11. 25 *3. 75 11. 75 *2. 75 12. 25 *2. 25 13. 75 *2. 50 12. 25 *3. 75 11. 75 *4. 50 0. 25 *4. 25 11. 75 *4. 50 0. 25 *4. 25 11. 75 *4. 50 0. 25 *41. 50 12. 25 *13. 75 *2. 50 *20. 25 *13. 75 *2. 50 *20. 25 *13. 75 *2. 50 *20. 25	0. 25 * 15.0 0. 25 * 20.00 * 3. 25 * 11.0 0. 6. 75 * 6. 50 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 22.00 * 42.5 * 12.5 * 42.5 0. 75 * 15.5 * 22.5 * 13.7 * 12.5 * 1	0. 25 * 15.0 0 3. 25 * 11.0 0 6. 75 * 6. 50 9. 25 * 5. 78 9. 78 * 4. 75 10. 25 * 4. 25 11. 75 * 4. 50	0. 25 *15.0 3. 25 *11.0 6. 75 *6.50 9. 25 *5. 78 9. 78 *4. 75 10. 25 *4. 25 11. 75 *4. 50	0. 25 * 15.0 0. 3. 25 * 11.0 0. 6. 75 * 6. 50 0. 9. 25 * 5. 78 0. 75 * 26. 00 * 77. 75 * 22. 00 * 42. 51 * 15. 00 * 11. 25 * 3. 75 11. 75 * 15. 75 * 15. 75 * 22. 50 12. 25 * 13. 0 \$ 5. 25 * 90. 0 * 8. 75 * 4. 50 11. 25 * 3. 75 11. 75 * 15. 75 * 22. 75 12. 25 * 13. 0 \$ 75 * 25. 50 12. 25 * 13. 0 \$ 75 * 25. 50 12. 25 * 13. 0 \$ 75 * 25. 50 12. 25 * 13. 0 \$ 75 * 15. 50 12. 25 * 13. 0 \$ 15. 50 12. 25 * 13. 0 \$ 15. 50 12. 25 * 13. 0 \$ 15. 50 12. 25 * 13. 0 \$ 15. 50 12. 25 * 13. 0 \$ 15. 50 12. 25 * 13. 0 \$ 12. 50 12. 25 * 13. 0	0. 25 * 15.0 0 3. 25 * 11.0 0 6. 75 * 6.50 9. 25 * 5. 78 9. 78 * 4. 75 10. 25 * 42. 55 11. 75 * 42. 50	0. 25 * 15.0

Threads only, buttweld and scamless, 2½ pt. higher discount. Plain ends, buttweld and scamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1½, 1½ and 2-in., 1½, pt.; 2½ and 3-in., 1 pt., e.g., ninc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts.

East St. Louis zinc price new 12.50¢ per lb.

TOOL STEEL

F.o.b.	mili Cr	v	Mo	Co	per lb	SAE
18	4	1	_	-	\$1.84	T-1
18	4	1	-	5	2.545	T-4
18	4	2	-	_	2.005	T-2
1.5	4	1.5	8	-	1.20	M-1
6	4	3	6	-	1.59	M-3
6	4	2	5	_	1.345	M-2
High-	carbo	n chr	omiur	m	.955 D	3, D-5
	ardene				.505	0-2
Specia	al car	bon			.38	W-1
Extra	cart	on .			.38	W-1
Regul	ar ca	rbon			.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

-	LAU SIE	:L	Base pri	ces, cent	s per lb f.o.b.
		Plate (L4, C4,	A3, J2)	Sheet (12)
_	Cladding	10 pct	15 pct	20 pct	20 pct
	302				37.50
	304	28.80	31.55	34.30	40.00
9.00	316	42.20	46.25	50.25	58.75
T sa	321	34.50	37.75	41.05	47.25
Stainless Type	347	40.80	44.65	48.55	57.00
S	405	24.60	26.90	29.25	
	410	22.78	24.85	27.00	*****

CR Strip (S9) Cepper, 10 pct, 2 sides, 44.20; 1 side, 36.80.

RAILS, TRACK SUPPLIES

430 23.45 25.65 27.90

F.o.b. Mill Cents Per Lb	No. 1 Std. Raile	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untrested
Bessemer UI	5.75	6,725	7.25			
Cleveland R3						15 25
So. Chicago R3	1			10.10		
So. Chicago R3 Enaley T2	5.75	6.725		10.00		
Fairfield T2		6 725		10.10	6 875	
Gary UI	5.75	0.100		10.10	6 875	
Huntington, C/6		6 725			0.010	
Ind. Harbor 13		0.160		10. 10		
Johnstown B3		6 795		10.10	***	
Joliet UI		0.100	2 95			
Kansas City S2	X3.10		2.60	10.10	- 1	20 90
Lackawanna B3	5 75	£ 790	2 95	10.10	6.875	
Lebanon B3	0.10	8.020	7 95		4.013	16.95
Minnequa C6	E 25	9 995	7 95	10 10	6 875	15.33
Pittsburgh St4	10.10	1.664	2.60	10.10	8.013	15.30
Pittsburgh J3				10 10		12.33
Seattle B2				10.10	6 95	40 00
Steelton B3	E 75		7 95		6.13	19.83
Struthers Y1			1.63	20. 20	8.013	
Torrence C7				10.10	4 75	A - Y - A
Torrance C7 Williamsport S5		£ 700			9.75	
Youngstown R3		9.723		100 00	Cener.	

COKE

- CINE	
Furnace, beehive (f.o.b.)	et-Ton
Connellsville, Pa\$14.75 to	\$15.50
Foundry, beehive (f.o.b.)	. \$18.50
Foundry oven coke	
Buffalo, del'd	.\$33.25
Ironton, O., f.o.b.	. 30.50
Detroit f.o.b.	32.00
New England, del'd	. 33.55
New Haven, f.o.b.	. 31.00
Kearney, N. J., f.o.b.	. 31.25
Philadelphia, f.o.b.	. 31.00
Swedeland, Pa., f.o.b	. 31.00
Painesville, Ohio, f.o.b.	. 32.00
Erie, Pa., f.o.b.	. 32.00
St. Paul, f.o.b.	. 31.25
St Louis Cob	. 01.80
St. Louis, f.o.b.	. 33.00
Birmingham, f.o.b.	. 30.35
Milwaukee, f.o.b	. 32.00
Novillo Is Pa	20 75

LAKE SUPERIOR ORES

\$1.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season.	
Freight changes for seller's account.	
Gross Ton	
Openhearth lump \$12.70	
Old range, bessemer 11.85	
Old range, nonbessemer 11.70	
Mesabi, bessemer 11.60	
Mesabi, nonbessemer 11.45	
High phosphorus 11.45	

ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Coiled or Cut Length				
F.a.b. Mill Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed			
Field		9.875	11120			
Armature	11.70	11.20	11.70			
Elect	12.40	11.90	12.40			
Special Motor		12.475	11725			
Motor	13.55	13.05	13.55			
Dynamo	14.65	14.15	14.65			
Trans. 72	15.70	15.20	15.70			
Trans. 65	16.30	Grain (Oriented			
Trans. 58	16.80	Trans. 80	19.70			
Trans. 52	17.85	Trans. 73 Trans. 66				

Producing points: Aliquippa (J3); Beach Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (J3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (S1); Vandergrift (UI); Warren, O. (R3); Zaneaville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*						
Diam. (In.)	Longth (In.)	Price	Diam. (In.)	Length (in.)	Price				
24 20 18 14 12 10 10 7 6 4 3 2 ¹ / ₂	84 72 72 72 72 72 60 48 60 48 40 40 24	27.25 26.50 27.50 27.25 28.25 29.50 30.00 29.75 33.25 37.00 39.25 41.50 64.00	48 35 39 24 20 17 14 10 8	100, 110 110 110 72 90 72 72 72 60 60	12.50 11.20 11.70 11.95 11.55 12.10 12.55 13.80 14.25				

• Prices shown cover carbon nipples.

REFRACTORIES Fire Clay Brick

	,			C	arloads	per 1000
Super	duty,	Mo.,	Pa.,	Md.,	Ky	\$185.00
					a, Pa.,	
add	\$5.00					140.00
Mediu	m dut	у				125.00
Low	duty	(exc	ept	Salin	a. Pa.	

right duty (except Saima, ra.,	
add \$5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa.,	
add \$2.00)	103.00
Ground fire clay, net ton, bulk	22.50
Silica Brick	

Mt. Unio Childs, F	la	YS,	,	L	a	t	r	0	b	e	F	3	a.								•	163	.00
Chicago	D	ist	r	ic	t													۰				168	.00
Western	U	ta	h	1			,		e			۰										183	1.00
Californi											٥											165	0.0
Super D																							
Hays,	P	a.,		A	.1	h	16	1	18	١,	1	1	93	٤.		V	V	ir	16	Ì.			

Silica cement, net ton, bulk, Ens-		
Silica cement, net ton, bulk, Chi- cago	163.00-	168.00
cago 26.78 Silica cement, net ton, bulk, Ensley, Ala. 27.78 Silica cement, net ton, bulk, Mt. Union 25.78 Silica cement, net ton, bulk, Utah	Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Ens- ley, Ala. 27.76 Silica cement, net ton, bulk, Mt. Union 25.77 Silica cement, net ton, bulk, Utah	Silica cement, net ton, bulk, Chi-	
ley, Ala. Silica cement, net ton, bulk, Mt. Union Silica cement, net ton, bulk, Utah	cago	26.75
Silica cement, net ton, bulk, Mt. Union		
Union 25.78 Silica cement, net ton, bulk, Utah	ley, Ala	27.75
Silica cement, net ton, bulk, Utah		
	Union	25.75
and Cant 39.00		
	and Calif	39.00

Chrome Brick	Per net ton
Standard chemically be	
iner, Calif Burned, Balt	119.00
Managaille Balak	

Magnesite Brick Standard, Baltimore\$140.00 Chemically bonded, Baltimore 119.00

Grain Ma	gnesit	e	St.	%	to	1/4 -in.	grains
Domestic,	f.o.b.	Bal	tim	ore	in	bulk.	\$73.00
Domestic, Luning.		Che	wa	ah,	W	ash.,	
in bulk							46.00

in sacks	 52	.00-54.00	
Dead Burned Dolomite	Per	net ton	
F.o.b. bulk, producing po Pa., W. Va., Ohlo Missouri Valley Midwest	 	15.60	

MERCHANT WIRE PRODUCTS

	Standard Q Coated Nails	Waven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
F.o.b. Mill	Col	Col	Col	Col	Col	é/lb.	¢/lb.
Alabama City R3 Aliquippa J3*** Alianta A6** Bartenville K2** Bufale W6 Chicago R3 Cleveland A6 Cleveland A6 Cleveland A5 Cleveland A9 Debuth A5 Debuth A5 Daluth A5 Daluth A5 Daluth A5 Daluth A5 Daluth A5	173 175 175 173	187 190 192 192 190 190 192 187 187		214 214 212 212 214 212 212	198 198 196	8.75 9.10 9.00 9.00 9.00 9.10 9.00 9.00	9.675 9.425 9.775 9.55° 9.70 9.55
Galveston D4. Houston S2. Jacksonville M4. Johnstown B3** Joliet, Ill. A5. Kokomo C9. L. Angeles B2** Kansas City S2* Minnequa C6.		192 197 190 187 189 192	177	219 212 214 217	198 203 196 193 195* 198*	9.10 9.00 9.00 9.10 9.95 9.25 9.25	9.80† 9.775 9.675 9.55 9.65° 10.625 9.80†
Monessen P6 Palmer, Mass. W6 Pittsburg, Cal. C7 Rankin, Pa. A5 So. Chicago R3 S. San Fran. C6 SparrowaPt. B3** Struthers, O. Y1* Worcester A5 Williamsport S5.	192 173 173 175	210 187 187		236 214	193 193 198	9.30 9.60 9.60 8.65 9.95 9.10 8.65	9.325 9.85* 10.15 9.55 9.20 10.50† 9.775 9.20 9.85

• Zinc less than .10¢. ••• .10¢ zinc. •• 11-12¢ zinc. † Plus zinc extras. ‡ Wholesalers only.

C-R SPRING STEEL

		CARBON CONTENT										
Cents Per Lb F.o.b. Mill	0.26-		0.61- 0.80	0.81- 1.05	1.06-							
Anderson, Ind. G4		10.40		15.60	18.55							
Baltimere, Md. 78		10.70		15.90	16.85							
Bristol, Conn. W12			12,90	16.10	19.30							
Boston 78			12.90	15.90	18.85							
Buffalo, N. Y. R7			12.60	15.60	18.55							
Carnegie, Pa. S9			12.60	15.60	18.55							
Chicago.	0.05	20 40		15.60	10 00							
Cleveland A5 Dearborn S1			12.60	15.60	18.55							
Detroit D1	9.05		12.70	15.70								
Detroit D2	9.05		12.70	13.10	*****							
Dover, O. G4	8 95		12.60	15.60	18.5							
Evanston, Ill. M8	9.05		12.60									
Franklin Park, Ill. 78	9.05		12.60	15,60	18.5							
Harrison, N. J. CII.				16, 10	19.30							
Indianapolis R5			12.60	15,66	18.5							
Los Angeles Cl	11.15		14.80	17.80								
New Britain, Conn. S.	7. 9.40	10.70	12.90	15.90	18.8							
New Castle, Pa. B4.	8.95	10.40	12,60	15.60								
New Haven, Conn. D	7 9.40	10.70	12.90	15.90								
Pawtucket, R. I. N7.		10.70	12.90	15.90	18.8							
Riverdale, Ill. A7			12.60		18.5							
Sharon, Pa. Sl			12.60									
Trenton, R4			12.90									
Wallingford W1			12.90									
Warren, Ohio T4			12,60		18.7							
Worcester, Mass. 45	9.50		12.90									
Youngstown R5	9.10	10.5	5 12.60	15.60	18.5							

ROILER TURES

\$ per 100 ft, carload lots	Si	ize	Sean	Elec. Weld	
cut 10 to 24 ft. F.o.b. Mill	OD- ln.	B.W.	H.R.	C.D.	H.R.
Babcock & Wilcox	2 21/2 3 31/2 4	13 12 12 11 10	40.28 54.23 62.62 73.11 97.08		35.74 48.13 55.59 65.84 88.16
National Tube	2 21/2 3 31/2 4	13 12 12 11 10	40.28 54.23 62.62 73.11 97.68	63.57 73.40	35.74 48.13 55.59 65.84 88.10
Pittsburgh Steel	2 21/2 3 31/2	13 12 12 11	40.28 54.23 62.62 73.11	63.57 73.48 85.78	

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b. 29.50 to Electrolytic, domestic Sponge Atomized Hydrogen Reduced 11.25 to Carbonyl	34.50 11.50 11.25
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders Electrolytic, domestic Precipitated Atomized Hydrogen reduced, f.o.b.	
Bronze Chromium, electrolytic Lead Manganese, f.o.b. Molybdenum Nickel Nickel Silver Nickel Silver Nickel Steel Solder Stainless Steel, 302 Stainless Steel, 302 Stainless Steel, 306 Steel, atomized, prealloyed, 4600 series 14,00 ph Tin 14e ph Titanium, 99.25+%, per ib., f.o.b. Tungsten \$3.	\$5.00 19.00 42.00 \$3.60 to \$3.95 \$1.05 to \$1.03 53.50 Is metal value \$1.07 \$1.26 Is metal value Is metal value \$1.125

BOLTS, NUTS, RIVETS, SCREWS (Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Con- tainers	Con- tainers	20,000 Lb.	40,000 Lb.
Machine				
1/2" and smaller x 3" and shorter	55	57	61	62
%" diam. x 3" and shorter	47	4916	54	55
" thru I" diam x 6" and shorter " thru I" diam.	37	391/6	45	46
longer than 6" and 13%" and larger x all lengths Rolled thread, 36"	31	34	40	41
and smaller x 3" and shorter Carriage, lag, plow,	55	57	61	62
tap, blank, step, elevator and fitting up bolts ½" and emaller x 6" and shorter	48	5014	55	56

Note: Add 25 pet for less than container quantity.

Distributor prices are 5 pet less on bolts and square nuts.

Nuts,	Hex,	HP	reg.	&	hv	y.		F	u	ll e	case or
% in. % in. 1% in	or sn to 14	nalle in. lar	incluger .	isiv	ve		* * *	 * * *	* * *	* * *	62 56 51 ½
C. P.				hvy	1.						co

% in and smaller	41
Hot Galv. Hex Nuts (All Types)	
1% in. and larger	51
% in. to 11/2 in. inclusive	56
% in. or smaller	62

74 In. and smaller	31
Semi-finished Hex Nuts	
% in. or smaller	62 56
1% in and larger	keg

Fir	nish	ed							
%	in.	and	smaller	* * *	 			*	65

Rivets	Base per 100 lb
1/2 in. and larger	Pct. Off List
7/16 in. and smaller	

Cap Screws Discount (Packages) Full Finished H. C. Heat Treat
New std. hex head, packaged Full Case

%" diam. and smaller x 6" and shorter	54	42
%", %", and 1" diam. x 6" and shorter %" diam. and smaller x	38	23
longer than 6"		
longer than 6"	** C-	1018 Ste

		rtons B	
%" through %" dia. x 6" and shorter %" through 1" dia. x 6"	59	48	
and shorter	45	32	

Minimum quantity—%" through %" diam., 15,000 pieces; 7/16" through %" diam., 5,000 pieces; %" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

		Disco	unt
Plain Finish Cartons		Mach. crews 60	Stove Bolts 60
Bulk To 4" 1	Quantity		
	,000-and over	60	
5/16 to 1/2" diam. incl.	,000-200,000	60	••

Machine Scr	ews & Stove I	Bolt	Nuts
In Cartons .	Quantity	Hex 16	Square 19
diam. & }	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)
Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots
Brass, 80-20, ball anodes, 2000 lb or more
Zinc, ball anodes, 2000 lb lots 18.75 (for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carton, 5000 lb
Cadmium, 5000 lb

Chemicals	
(Cents per lb, f.o.b. shipping poin	(1)
Copper cyanide, 100 lb drum Copper sulphate, 100 lb bags, per	65.90
Nickel salts, single, 100 ib bags	22.75 36.00
Nickel chloride, freight allowed,	45.00
N. Y. 200 lb drums	24.70
Zinc cyanide, 100 lb	60.75
N. Y. Chromic acid, flake type, 10,000 lb	45.50
or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham																				125.8
New York															*					138.5
Chicago	* 1		*				*		*				*			*	*			140.9
San Francisc																				
Dec. 1955,	1	0	d	14 6	3,		C	lo	2.5	38	1	1	В		1	01	r		h	eavier
5 in. or large	r		b	el	i	0	191	d		8	p	91	g	0	Ē.	1	Di	ķ	16	. BE-
planation: p		D.	7	9		8	21	30		3.	A	,		3	11	91	2.0	0	-	asane.

STEEL SERVICE CENTERS

Matropolitan	Price	dellare	ner 100	Bh.	

Cities		Sheets		Strip	Plates	Shapes	Bar	ra I		Alloy	Bars	
City Delivery t	Hot-Rolled (18ga. & hvr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled		Standard	Hot-Rolled (merchant)	Cold- Finished	Hot-Rolled 4615 As rolled	Het-Relled 4148 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140
Atlanta	8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24				*****
Baltimore**\$.10	9.90	10.10	10.16	11.55	10.00	10.65	10.15	11.90	17.48	16.48	21.58	28.83
Birmingham**	9.43	10.20	10.46	10.91	9.79	10.00	9.59	13.14	16.76			*****
Boston**	10.52	11.27	11.87	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04
Buffalo**	9.80	10.50	11.40	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.88
Chicago** 15	8.69	10.35	11.10	10.35	8.62	9.16	8.79	10.80	17.10	16.10	19.70	20.45
Cincinnati**15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	20.77
Cleveland**15	8.691	9.89	11.09	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.54
Denver	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit**	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.63
Houston**	9.65	9.65		10.85	9.65	9.35	8.90	13.10	17.50	16.55	21.55	20.85
Kansas City15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**	9.95	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.86
Memphis15	8.55	9.80		8.60	8.93	9.01	8.97	12.11				
Milwankee**15	8.83	10.49	11.24	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.85
New York 10	9.27	10.59	11.45	9.74	9.87	9.84	10.09	13.35	16.16	15.60	20.10	19.35
Nerfolk	8.20			8.90	8.65	9.20	8.50	10.70				
Philadelphia 10	8.30	9.35	10.99	9.35	9.25	9.20	9.50	12.05	16.58	15.58	20.08	19.3
Pittsburgh**15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45
Portland	10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	20.75	20.2
San Francisco** .10	11.00	11.952	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.6
Seattle**	11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	18.60	17.86	22.70	22.2
Spokane**15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.58	22.3
St. Louis**15	9.07	10.73	11.48				9.17	11.43	17.48	16.48	21.58	19.3
St. Paul**15	8.95	9.46	10.69			9.48	8.85	11.64		16.69		21.0

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HB products may be combined for quantity. All galvanized sheets may be combined for quantity. Cold-combined for quantity. These cities are on not pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 36—129; Cold-crolled sheet—20 ga. x 36 x 96—129; Galv. sheet—10 ga. x 36—120; Eds-rolled strip—36 x 1; Plate—36 x 16. Plate—36 x 16.

(Effective Jan. 4, 1960)

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3	62.00	62.50°			
Birmingham 14'9.	62.00	62.50°	66.50		
Birmingham U4.	62.00	62.50°	66.50		
Buffalo R3	66.00	66.50	67.00	67.58	
Buffalo HI	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66,50	67,10	67.50	
Chester P2	68.00	68.50	69,86		
Chicago 14	66,00	66,58	66.50	67.00	
Cleveland 45	66.00	66,50	66.50	67.00	71.00
Cleveland R3	66.00	66,50	66.50	67.00	
Duluth 14	66.00	66,50	66.50	67.00	71.00
Erie 14	66,00	66,50	66.50	67.00	71.00
Everett M6	67.50	68,00	68,50		
Fontana K1	75.80	75.50			******
Geneva, Utah C7	66.00	66.50			******
Granite City G2.	67.90	68.40	68.90		******
Hubbard Y/			66.50		
Ironton, Utah C7	66.00	66,50			
Midland CII	66.00				******
Minnegua C6	68.00	68,50	69.00	******	******
Monessen P6	66.00	-	*****		
Neville Is. P4	66.00	66,50	66.50	67.00	71.001
N. Tonawanda 7/		66.50	67.00	67.50	
Sharnaville S3	66.00		66.50	67.00	
So. Chicago R3	66.00	66.50	66,50	67.00	
So. Chicago W8.	66.00		66,50	67.00	
Swedeland A2	68.00	68,50	69.00	69.50	
P 4 4 44	66-88	66.50			73.001
	68.00	68,50	66.50	67.00	77.00
			69.88	69.50	73.00
Youngstown Y1			66.50		*****

DIFFERENTIALS: Add, 75¢ per ton fer each 0.25 pct afficion er portion thereof over hase (1.75 to 2.25 pct except low pbos., 1.75 to 2.09 pct) 50¢ per ton fer each 0.25 pct manganese or portion thereof over 1 pct, 92 per ton fer 0.50 to 0.75 pct nickel, 31 for each additional 0.25 pct nickel, Add 51.00 fer 0.31 0.69 pct phose.

† Intermediate low abox

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingets, reroll.	22.75	24.75	24.00	26.25	-	28.00	41.25	33.50	38.50	-	17.50	-	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25		22.25	-	22.50
Billets, forging	-	37.75	38.75	39.50	42.50	42.00	64.50	48.75	\$7.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.88	39.00	37.25	40.50	-	44.25	69.25	53.50	63.50	-	31.00	-	32.00
trip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	86.75	65.50	79.25	40.25	40.25	42.50	40.75
Vire CF; Rod HR		42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS-

Shetts: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; altimore, E1; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Detroit, M2;

Strip: Midland, Pa., C11; Waukegan, Cleveland, 45; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville Pa., U2; Detrott, M2; Detroit, S1; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, R5; Sharon, Pa., S1; Butler, Pa., A7 Wallingford, Conn., U3 (plus further conversion extras); W1 (25e per lb. higher); Sewmour, Conn., S13; (25e per lb. higher); New Bedford, Mass., R6 Gary, U1, (25e per lb. higher); Baltimore, Md., E1 (300 series only).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., 17; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, 14; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Ambridge, Pa., B7.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Newark, N. J. D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C2; Bridgeport, Conn., N8.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, UI.

Plates: Ambridge. Pa., B7; Baltimore, E1; Brackenridge. Pa., A3; Chicago, U1; Mushall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, anton, O., R3; Water-liet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; wensboro, Ky., G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective Jan. 4, 1960)





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SMZ Cents per pound of alloy, delivered, 60-65% St, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh. 21.15	Silvery Iron (electric furnace) Sil 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. Sil 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	12-15%, del'd lump, bulk-	25¢
V Foundry Alloy Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed. Carload lots 18.45 Ton lots 19.95 Less ton lots 21.20	Cents per pound contained Si, lump size, delivered, packed. Ton lots, 98.25% Si, 0.50% Fe 24.95 22.00 21.50	tained B 2000 lb carload Ferro Zirconium Boron, Zr 50% to 60%, B 0.8% to 1.0%, Sl 8% max, C 8% max, Fe balance, fo.b. Niagara Falls, New York, freight allowed, in any quan- tity per pound	5.50 30¢
Graphidox No. 4 Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%. Carload bulk 19.20 Ton lots to carload packed 21.15 Less ton lots 22.40 Ferromanganese Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload	Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Sl, briquets. Carloads, bulk	F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up 10 to 14% B	.25¢ 1.20 .85 1.20 1.50
lots, bulk. Producing Point per-lb Marietta, Ashtabula, O.; Alloy. W. Va.; Sheffield, Ala.; Portland, Ore. 12.25 Johnstown, Pa. 12.25 Neville Island, Pa. 12.25 Sheridan Pa. 12.25	Ferrovanadium 50-55% V delivered, per pound, contained V, in any quantity. 3.20 Openhearth 3.30 Crucible 3.30 High speed steel 3.40	Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over No. 1 No. 79 Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Sl. 2.00% max. C, 2 in. x D, del'd.	1.05 50¢
Philo, Ohio 12.25 S. Duquesne 12.25 Add or substract 0.1c for each 1 pct Mn above or below base content. Briquets, delivered, 66 pct Mn: Carloads, bulk 14.80 Ton lots packed in bags 17.20	Calcium Metal Eastern zone, cents per pound of metal, delivered. Cast Turnings Distilled Ton lots\$2.05 \$2.95 \$3.75 100 to 1999 lb. 240 3.30 4.55	Ton lots (packed)	1.46 1.57 2.15

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1	1500	G.E.	MT	6600	1187
2	800	Whse.	CW	550	1776
1	600	Whse.	CW	220/440	900
1	600	Whse.	CW-4-32D	-15 440	1778
1	500	Whse.	CW	550	350
1	300	AC	ANY	440/2300	720
1	300	G.E.	MTP561	2200	1800
1	200	G.E.	IM	440/2200	589
1	125	G.E.	4.00	2200	000
		unused	MT-557	220/440	1200
1	100	G.E.	MT-564	440/220	450
1	250	G.E.	IM-16	220/440	875
1	250	A.C.	ANY	550	600
1	250	Cr. Wh.	Size 29O	2300	350
1	250	G.E.	MT-424Y	4000	257
1	250	G.E.	IE-13B	220	1800
0	200	Whise,	CW-890	2300	1775
0	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695
		SQUIRI	REL CAGI	E	
1	800	G.E.	KT-573	2200	1180

		2011	KKEL CAGE		
1 2 4 2 1	500	G.E.	KT-573 FT-559AY	2200	1180
	500	Whse.			3600
-		Whse.	CS-1115	3300	863/445
8	500	Whise.	CS-1216	2200	500
	450	Ell.	F-3910	2200	1200
1	400	Whse.	CS-7151-		
			610H 660	0/4000	3585
1	300	Whse.	CS-1002 23	00/440	600
1.	250	White.	CS-8758	2200	1775
1	200	Whise.	CSP-5818	440	3450
2	200	Whise.	CS-8558		
			D.P. 2	20/440	1750
1	150	G. E.	FT-558	2200	875
1	150	Whse.	CS	440	580
1 1 3 1	125	White.		20/440	1160
3	1.00	Whise.		00/440	1100
1	100	Whise.	B.B.CS-607 9		1780

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1	6000	G.E.	ATI 8	
1	3500	G.E.	P.F. 2200/6600 TS 1.0	600
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2000 1750 1750 700 350 350 350 325	G.E. G.E. G.E. Whse. G.E. G.E. El Mach.	P.F. 4600/2300/4 ATI 2300 ATI 2300 TS 2300/4600 TS 8P.F. 2300 1.0P.F. 240 ATI 1.0P.F. 240 BRKT 240	980 3600 980 1200 900 150 1800

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Used Machine Sales To Climb in 1960

Business is expected to run well through the year. Recovery from the steel strike slowdown continues.

Exports will play an important part in making 1960 a profitable

 Used machinery dealers are looking for a good year in 1960. They feel stronger industrial buying desires; increased material, manpower and capital and an improving export picture will combine to make a profitable year.

One sign of their optimism is the fact that most dealers are increasing inventories. In December, 1957 dealers had an average 104 select machines on hand. At the end of last month the number had jumped to about 155 machines.

Steady Climb — Industry sales have increased steadily since the lowpoint reached in 1957. The increase has been constant and firm, with only seasonal and temporary

Dealers have also improved customer service. R. K. Vinson, executive director, Machinery Dealers National Assn., says the weekly inter-dealer exchange of reporting "newly acquired" machines and the inter-dealer listing of "guaranteed" machines have helped business and customers.

Wider Field-Using these systems, a dealer can offer a customer a wider selection of machines carefully inspected by professional machine tool appraisers. Also, hard-tofind machines can be more easily located through the MDNA's weekly "wanted" bulletin mailed to the membership.

The MDNA reports that machines made during World War II are still being absorbed by industry. Most of the machine tools, used in making defense materials, are in good shape and about 20,000 to 25,000 are being bought every year.

Foreign Markets—American used machines are popular abroad. Dealers expect that demands from foreign users will be greater this year than they have been in the past.

Markets are developing in nations where metalworking is still in an infant stage. On the other hand, many industrialized countries of Europe are calling for greater quantities of used American-made machine tools.

Reports Good - Domestic markets, for the most part, are recovering from the doldrums caused by the steel strike. Dealers in most parts of the nation report that sales are again on the upswing and that they expect them to stay that way for some time. Only in a few areas (Detroit is one) do dealers say that business is still poor.

Final settlement of the steel issue should bring even better business. Many firms are looking around for good used machines, but are waiting for final settlement before making any purchases.

ROLLING MILLS—STEEL WORKS EQUIPMENT

ROLLING MILLS

4

- 1-4-HIGH HOT STRIP MILL, single stand, reversing, 25" & 42" x 66".
- reversing, 25" & 42" x 66".

 40" PINION STAND, 2-high, for blooming mill; with spare pinions.
- 1-PLATE MILL, 3-high, 34" & 22" x 112". 1-28" BILLET MILL, 3-high, 2 roll stands,

- 28" x 40" HOT STRIP MILL, 2-high, with 2500 HP D.C. reversing motor, 18" 3-HIGH BAR MILL, with pinion stand and roll stand.
- 1—10" BAR MILL, two stands 3-high, one stand 2-high, 600 HP drive. 1-10" ROD MILL, 2-high, 14 passe
- 1—9" 3-HIGH BAR MILL, 5 stands, with variable speed drive and M-G set. 1—32" & 20" x 62" SHEET ROUGHING MILL, 3-high, with mechanical tables.
- 1-28" 2-HIGH PINION STAND for sheet mill.
- -28" COLD SHEET MILL STANDS, 2-
- 1-16" x 22" COLD MILL, 2-high, with 100 HP A.C. motor and gear reducer.
- 10" x 14" COLD MILL, 2-high, with extra rolls.
- 1-8" x 10" COLD MILL, 2-high, with 40 HP A.C. motor, extra rolls.
- HP A.C. motor, extra rolls.

 1-51g, x 10" COLD MILL, 2-high, with 10
 HP A.C. motor, extra rolls.

 1-31g, x 8" x 53g, COLD MILL, 4-high,
 with payoff and take-up reel.

 1-YODER INDUCTION WELD TUBE
 MILL, capacity 2" to 8" O.D. non-ferrous
 tubing.

GEAR REDUCTION SETS

- 1-2000 HP GEAR DRIVE, ratio 10 to 1.
- -1200 HP GEAR DRIVE, ratio 3.73 to 1.
- -1200 HP GEAR DRIVE, ratio 5.92 to 1.
- 1-500 HP GEAR DRIVE, ratio 10 to 1. 1-500 HP GEAR DRIVE, ratio 7.83 to 1.
- 1-150 HP GEAR DRIVE, ratio 90.66 to 1.

MOTORS

- 1-5200 HP reversing, 0/100 RPM, 700 volts D.C.
- 1-3500 HP Allis-Chalmers, 514 RPM, 11000/3/60.
- 1-2000 HP General Electric, 200/400 RPM, D.C.
- 1—1200 HP Allis-Chalmers, 353 RPM. 1—500 HP G.E., 327 RPM, 2200/3/60. 1—500 HP G.E., 155/500 RPM, D.C.

SHEARS

- 1-BLOOM OR SLAB SHEAR, unused, ca-pacity 14" x 18" or 6" x 30" hot.
- Datty 14 1 18 or 6 1 30 160.

 BILLET OR BAR SHEAR, United Eng.
 No. 4, vertical open-side, 3 ½" aquare.

 BAR SHEAR, vertical open-side, 1 ½"
- 1-ALLIGATOR SHEAR, Canton No. 4, 4"
- 2-SHEET SQUARING SHEARS, capacity
- 1-SIDE TRIMMER for strip 48" wide x 3/16" thick.
- 5/10° thick.

 I-FLYING SHEAR FOR HOT STRIP,
 United Eng. 72" wide x \(\frac{1}{2} \)" thick.

 1-34" x 192" ROLL GRINDER with motors
 for main drive, head stock, carriage,
 cross feed, and oil pump. Grinding
 wheel size 36" x 4", Good condition,
 little used.

FURNACES AND FURNACE EQUIPMENT

- 1-BESSEMER CONVERTER, 25 tons capac-
- 2-65-TON ELECTRIC MELTING FURNACES, 19' shell, top charge.
- 1—1-TON ELECTRIC MELTING FURNACE, side charge, with spare transformer. 2—PACK FURNACES FOR HOT SHEET MILL, 62" x 60°, double chamber, con-

- 200 TON INGOT STRIPPER CRANE, 50' span, 4'6" stroke, tongs open 2'1" min., 5'10" max.
- 1-OPEN HEARTH CHARGING MACHINE, 5 tons, Wellman Eng. Co. high type 11' span.
- HOT ME METAL TRANSF TRANSFER 2-90-TON CARS.

LEVELLERS AND STRAIGHTENERS

- -72" ROLLER LEVELLER, work rolls
- 1-WIRE STRAIGHTENER AND CUT-OFF MACHINE, Medart, automatic. 14" to %" diam.
- 1—STRAIGHTENER AND CUT-OFF MA-CHINE, Hallden, 25 HP A.C. motor, .312" to .562" diam.

MISCELLANEOUS

- 1—BILLETEER, size "C." for conditioning billets up to 13" square.
- 1-BUILDING, structural steel, 50' x 396', with 25' lean-to, runway for 20-ton crane.
- 1—DOUBLER for hot steel sheets, mechanical roll type, capacity 44" x 144".
- 1-ROLL LATHE, 36", will turn 2 rolls at once, enclosed headstock,
- 1—PICKLING MACHINE for sheets, Aetua-Standard, Taylor design, with rocker
- 1—PRESS, 1500-ton steam hydraulic forg-ing, 4 posts each 14" diam., main ram ing, 4 pc 24" diam.
- DOUBLE PULLEY MAGNETIC SEPA-RATOR, Stearns Magnetic Inc., 21" wide, with electrics.
- 1—SWAGING MACHINE, for 2" O.D. tubes, with 25 HP motor.
- 6-TINNING LINES for making tin plate by hot dip process, with Dexter feeders.

SPECIALS

NON-FERROUS COLD MILLS

- 1—24" x 36" Farrel-Birmingham COLD MILL, 2-high. Speed 17.6 RPM or 110.5 FPM. Manual screwdown. Bronze bearings. Includes pinion stand, speed reducer, and 400 HP motor, 450 RPM, 4600 volt, 3 phase, 60 cycle. 6 forged steel rolls.
- 1-22" x 36" Farrel-Birmingham COLD MILL, 2-high. Speed 26 RPM or 149.8 FPM. Manual screwdown.
- Textolite bearings. Includes pinion stand, speed reducer, and 600 HP motor, 450 RPM, 4600 volt, 3 phase, 60 cycle. Forged steel and cast iron rolls, one pair each.
- 1—Roller conveyor system for handling slabs and coils of metal to and from the above mills. Made by Mathews Conveyor Co.

All types of rolling mills and steel works equipment, both large and small, are furnished by us. This can mean a single machine or complete equipment for a plant. Our shipments are made under the careful supervision of our engineers. The long period of our operations has been marked by the sustained succession of heavy mill shipments to customers in the United States and abroad. Our business was founded in 1915.

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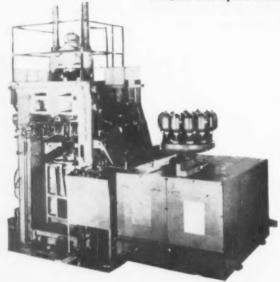
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7

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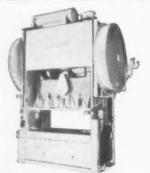
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MULTIPLE SPINDLE DRILLS

2 spindle No. 2014 Barnes, H.D.
2 spindle No. 6 Colburn Manufacturing Type H.
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4 spindle No. 2014 Barnes H.D., m.d.
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Machine, m.d.
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Model H3 Barnes Hydram, m.d. Model H4 Barnes Hydram, m.d.

20" Barnes, m.d., 1940 20" Barnes All Geared Self-Oiling Drill & Tap-20" Barnes All Geared Self-Oiling Drill & Tapper, m.d.
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No. 25 Boote-Burt, m.d., H.D.
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10" Pratt & Whitney Model M 1(39 Single
Wheel, m.d.
No. 12 Fellows Horizontal Gear Lapper, m.d.

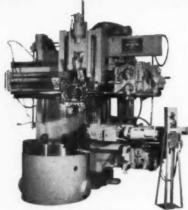
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13

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I-LOGEMAN BROS. Scrap baler, medel #122-PX60, balling chambers 60" long, 14" wide, 18" doep.
Cap, 6" x 6" x %" angles. Table 24 x 33", Jaw clutch.
6.E. 50 HP moter. Ser. #12256.

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PUNCHES

I-BEMENT MILES Single End Punch 100 ton B. G. 42" threat. 18" gas, stroke 2" SH 11", Hand adj. ram. Ser. 2306. Arch jaw.
I-LONG & ALLSTATER 200-ton Gang Punch. double back gearsd 2" stroke, 6" shut height. Bed 12" x 100", ram. 3" stor, 80" between husings. 74" dis. shaft. Hand adj. be ram jaw durth.
I-BERTSCH 25-ton single end punch. Threat 18" stroke 1", seven bis. Bed 6" x 5", Jaw clutch. Hand adj. to ram.

SHEARS

I—CANTON #22 All Steel Serap shear. 24" blade w/Wagner $7\frac{1}{2}$ HP. Ser. #46198.

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I—AIRCO DB Travograph Cutting Mach. Model 10. 5 cutting heads, electric high pressure straight line cutting, new manual tracer. ½ HP motor. Ser. #1016.

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I—AJAX 3" Upsetter, air clutch & air brake. 30 HP motor with pit conveyor. Ser. #4254, New 1947.

WELDING POSITIONERS

I-RANSOME Wolding Positioner. Size 160P. Ser. 253438. Table 53" x 53". Power tilting & elevation C of G 12" above table. 12" accentric. Geared table. 1936.

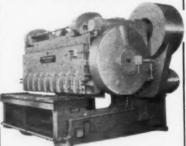
I-P & H #2 Welding Positioner. 2500% cap. Ser. ## Table manual tilt & elevation of table. Rotary operation geared motor driven with 1/3 HP.

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- (1) 3000-H.P. Gen. Elec. Motor, 600-V.D.C. 90/180 R.P.M. with, (1) 3000-K.W. 3-unit Allis-Chalmers M.G. set, 600-V.D.C. with 5000-H.P. Syn. Motor 13800/6700,4160-V., 3 ph., 60 cy. & mag. F.V. starbing equipment. 6900/4160-V., 3 ph. starting equipment.
- (2) 600-H.P. Al.Chal. Motor, 600-V.D.C. 300/600
- 600-H.P. Al. Jan. Motor.
 R.P.M. with.
 1000-K.W. 3-unit M.G. set (2) 500-K.W. 600-V.D.C. Generators.
 8 1500-H.P. Syn. Motor.
 2300-V., 3 ph., 60 cy.
 8 starting equip's.
- 300.H.P. Whse. Motors, 230.V.D.C. 300/600 R.P.M. with,
 600.K.W., Gen. Elec. 3-unit M.G. Set (2)
 300.K.W. Generators & 750-H.P. Syn. Motor,
 4160/2300-Y., 3 ph., 60 cy. & Mag. F.V.
 starting equipment.

(Any above items can be purchased separately)

ADJUSTABLE SPEED MOTORS

QI	I. H.P.	MAKE	VOLTS	R.P.M.
10	2550	Whse.	700	108/162
1.	2200	Whse.	600	92/132
10	2000	G.E.	600	200 / 400
10	2000	G.E.	350	230/350
10	1750	G.E.	600	200/300
10	750	Whse.	250	200/400
4.	700	Whse.	250	300 / 700
2*	645	5 & 5	300	1000

1	600 235	Whse.	250 230	110/220 325/975
1	150	Whse,	230	400/1200
1	125	Whse.	230	450 900
1 ,	75	Whse.	230	250/1000

SLIP RING MOTORS

3 Phase-60 Cycle

QU.	H.P.	MAKE	TYPE	VOLTS	R.P.M.
1	3500	G.E.	Mill	6600/4160	240
1	2500	G.E.	Mill	2300	296
1	1800	Whise.	Mill	2300	252
1	1200	G.E.	Mill	2200	295
1	1000	Whse.	CW	2300	441
1	500	Ideal	5-4-20	4800	708
1	500	Al.Chal.	ANY	2200	505
1	500	Al. Chal.	ANY	2200	293
1	400	Al.Chal.	ANY	2200	505
1	400	Whse.	CW	2200	290
1	350	G.E.	I-M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
1	250	Whise.	CW	4160/2400	
1	250	G.E.	MT-414	2200	300

SYNCHRONOUS MOTORS

3 Phase-60 Cycle

QU.	H.P.	MAKE	P.F.	VOLT8	R.P.M.
1	6000	G.E.	Unity	2300	90
1	1750	G.E.	Unity	2200	3500
1	1500	Whse.	80%	2300	514
2(New)				
	1400	Whse.	80%	4160	450

G.E. El. Mchy. El. Mchy. Unity 80% Unity 440 2300/440 Whse. 2200 2200 /440

TYPICAL MILL & REEL DRIVES

- (2) 3500-K.W. Al.Chal. 5-unit Sets of (2) 1750-KW Gen., 350/700-VDC, (1) 5000-HP Syn. Motor, 13800/4900/4160-V., 3 ph., 60 cy. (1) 40-KW & (1) 10-KW exciters. (1) 600-K.W. Gen. Elec., 3-unit Set of (2) 300-KW, 250-VDC gen. & (1) 750-HP Syn. Motor, 4160/2300-V., 3 ph., 60 cy. & Magnetic F.V. Storting Cubicles. (1) 200-K.W. Gen. Elec. 3-unit Set of (2) 100-KW Gen., 250-VDC, 8.8., & 300-HP Syn. Motor 2300-V., 3 ph., 60 cy., Mag. F.V. Starting equipment.

STANDARD GENERAL PURPOSE M.G. SETS

ou.	00.040	***	D 0 WOLTO		
QU.	IC W	MAKE	D.C. VOLTS	A.C. VOLIS	
1	2400	G.E.	250	4600/2300	
1	1500	G.E.	250	4600/2300	
1	1250	G.E.	132/265	4160	
2	500	Whse.	280	4000/2300	
1	400	G.E.	275	4000/2300	
1	300	G.E.	250	4000/2300	
4	250	Whse.	250	2300	
2	200	G.E.	250/275	4000/2300	
2	150	G.E.	250	440	
1	125	G.E.	250	440	
1	100	GE	250	440	

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4302 CLARISSA STREET

CABLE ADDRESS "MACSTEEL" PHILADELPHIA, PA. PHILADELPHIA 40. PENNA.

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ARNOLD HUGHES COMPANY 2765 PENOBSCOT BLDG. DET WOodward 1-1894 DETROIT, MICH.

FOR SALE

ONE HOLCROFT COMPLETE CONTIN-UOUS 1000 LB. PER HR. IN-LINE GAS FIRED RADIANT TUBE CLEAN HARD-ENING FURNACE 36" WIDE, CAST LINK BELT. GAS FIRED ENDOTHERMIC GENERATOR, CONVEYORIZED QUENCH, AND DRAW FURNACE. RECIRCULATING

We also have other heat treating furnaces & generators.

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SHEET METAL MACHINERY

1/4" Shear, 20" gap, extra blades, \$4,000,00 13" 1/4" Shear, 20" gap, extra biades, 10" squering arm ... \$4,808.80 10" 14" Shear, 16" gap. 10" 14 ga. Pexto Pex, Shear, 18" gap. 6" 10 ga. Pexto Pex, Shear, 18" gap. 8" 12 ga. Sturdybender Press Brake. 5" 14 ga. Dreis & Krump Press Brake. 12" //4" Chicaga Pawer Leaf Brake. 12" //4" Chicaga Pawer Leaf Brake. 43 ton Niagara Punch Press, 18" throat. 60 ton Niagara Punch Press, 12" throat. 8 ga. Niagara Circle Shear and Flanger. FA18 Grob Filer, 18" throat; Mach., 14 ga.

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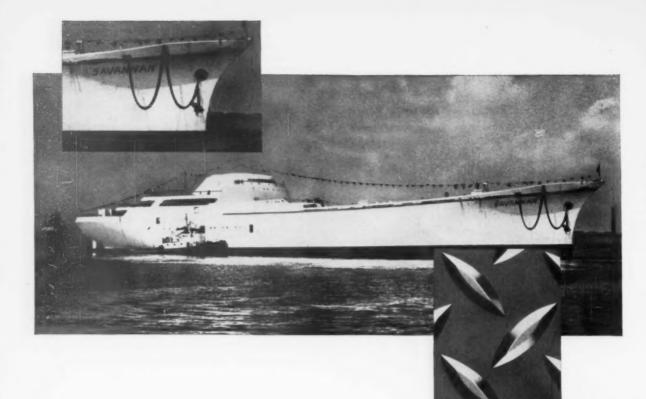
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